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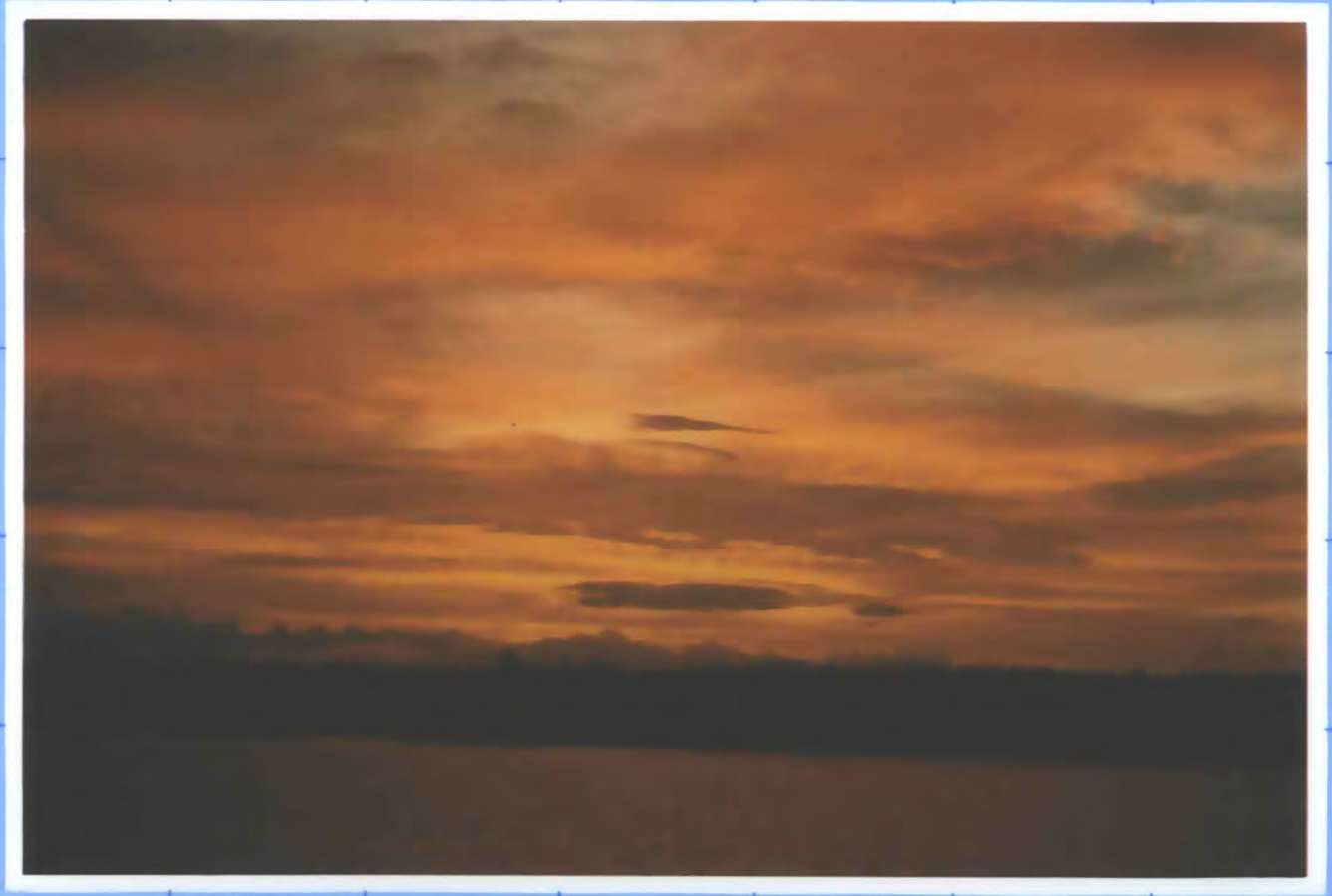
The Marine Observer

A quarterly journal of Maritime Meteorology



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July 1997

Met. O. 1022

THE MARINE OBSERVER

A QUARTERLY JOURNAL OF MARITIME METEOROLOGY PREPARED BY THE OBSERVATIONS VOLUNTARY (MARINE) BRANCH OF THE MET. OFFICE

VOL. 67 **No. 337** **JULY 1997**

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COVER PHOTOGRAPH: Sunset on the Rio San Juan, Venezuela, photographed by A. Roaf, Second Officer on the *London Enterprise* on 16 August 1994, whilst the vessel was at anchor in position 10° 05.1'N, 62° 38.5'W.

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Letters to the Editor, and books for review should be addressed to the Editor, *The Marine Observer*, The Met. Office OV(M) Scott Building Eastern Road Bracknell Berkshire RG12 2PW.

LONDON: THE STATIONERY OFFICE

Editorial

Two anniversaries occurring this year are guaranteed not to make headline news but are noteworthy nevertheless, for had the structures to which they relate never been built, then there would perhaps be one 'old standard' tune somewhat less popular, and one vital building block missing from the foundations of shipbuilding in this country.

One hundred and sixty years ago, the *Great Western* took to the water at Bristol; one of Isambard Kingdom Brunel's masterpieces, she was superseded in 1844 by his *Great Britain* which was the first screw-propelled, double-bottomed, iron-hulled transatlantic passenger ship. From these early beginnings evolved, among other designs of marine craft, the merchant vessels of today, positively greyhound-like by comparison. Nowadays, vessels working Pacific routes may perhaps find themselves calling at San Francisco and passing under the Golden Gate Bridge, the subject of the second of the two anniversaries previously mentioned. The bridge this year celebrates the sixtieth anniversary of its completion, in 1937. As an example of a suspension bridge it is both a famous landmark and a distant cousin of another of Brunel's engineering feats, namely the Clifton Suspension Bridge which spans the Avon Gorge at Bristol, and was completed in 1864 (five years after Brunel's death). Full marks go to the readers who gleefully point out that the famous song about leaving a vital internal organ in an American city refers to the city itself and not its welcome to seafarers; even so, the bridge has all but passed into American folklore, thanks in part to 'that' song, while Brunel's contributions to engineering both on land and sea are now a part of history.

Perhaps not making such a visual impact, although highly regarded nevertheless, are the experienced mariners who qualify for Special Long-service Awards. Weather observations made by UK vessels since the 1850s constitute part of the vast marine databank maintained by The Met. Office, the databank's contents being among the basic tools of research into weather and climate. The four long-serving Masters named on page 119 are recognized as having participated in the UK VOF scheme for at least 18 years; frequently, the Masters who qualify for these awards have themselves maintained or encouraged from others a supply of high-quality observations throughout, so continuing to fuel the databank. With regard to publicizing long-service awards in *The Marine Observer*, and without putting too fine a point on it, the view has been expressed in the past (for example, noted in the responses to *The Marine Observer* Readers' Survey, conducted in 1995) that these awards are of limited interest to others engaged in voluntary weather observing at sea, particularly if it be the case that they have accumulated comparatively few years of weather recording themselves, but observers who have fewer years behind them at present may yet be receiving such awards in the future and then we would wish to bring the attention of everyone to their long service too. Who would argue that a little appreciation of effort is not a good thing?

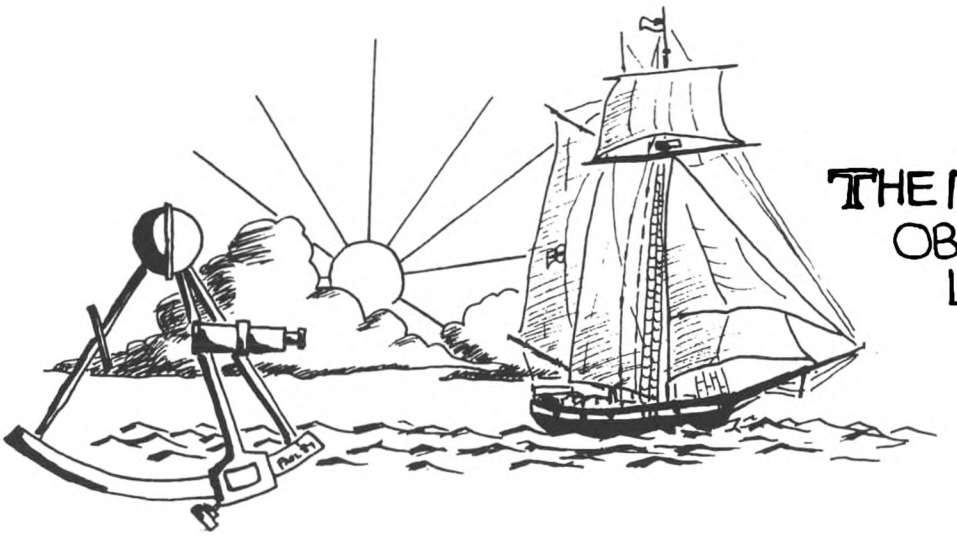
During the preparation of this edition, the Twelfth Session of the Commission for Marine Meteorology (CMM) under the auspices of the World Meteorological Organization, took place in Cuba. This was a new destination experience for our representative, Captain Stuart Norwell, and 'our man in Havana' would probably have found it all the more enjoyable had it not been for the meetings! He was among those taking part, during 10 days in March, in discussions on a variety of

marine-related topics including telecommunication arrangements, systems and techniques for marine observation and data collection, marine climatology and sea ice.

Any decisions and recommendations resulting from this session of CMM which may have an effect on current observing procedures will be promulgated in due course.

In the meantime it is 'business as usual' and we look forward to receiving more meteorological logbooks and more of your additional reports whilst trusting that the journal continues to provide what you want.

If not, let us know.



THE MARINE OBSERVERS' LOG

July, August, September

The Marine Observers' Log is a quarterly selection of observations of interest and value. The observations are derived from the logbooks of marine observers and from individual manuscripts. Responsibility for each observation rests with the contributor. All temperatures are Celsius unless otherwise stated. The standard international unit for barometric pressure is the hectopascal (hPa) which is numerically equivalent to the millibar (mb).

TYPHOON 'HERB'

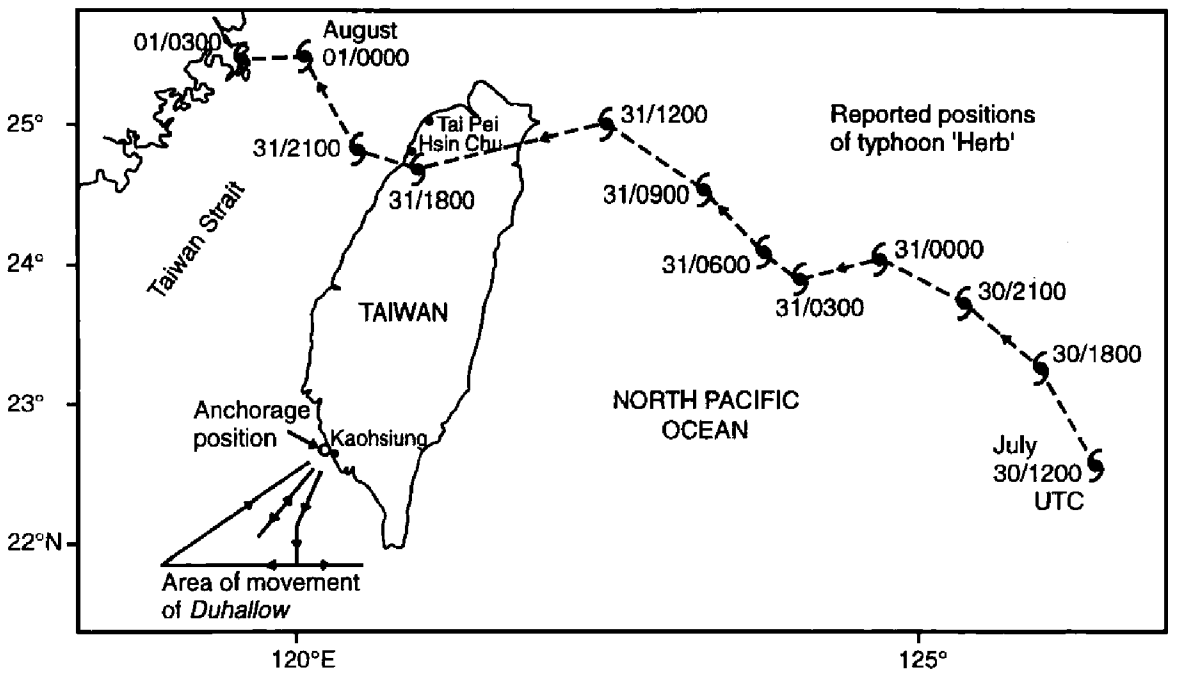
Taiwan Strait

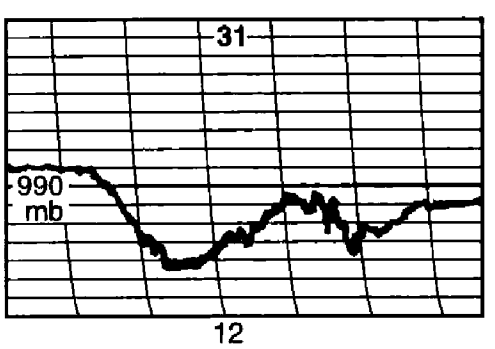
m.v. *Duhallow*. Captain J.H. Lacey. At anchor off Kaohsiung. Observers: the Master and ship's company.

28 July–2 August 1996. The vessel had anchored on the 28th to await docking in the aftermath of typhoon 'Gloria' which had passed through the area on 26 and 27 July; the wind was SW'ly, force 5–6, the pressure ranged between 1002 mb and 1004 mb and there was a south-westerly swell of 3 m. Weather conditions changed during the evening as the wind died down and veered to W'ly and then NW'ly.

On the 30th, conditions deteriorated with a sudden increase in wind to NW'ly, force 4–5 while the pressure began to decrease. Typhoon Herb was predicted to move north-west at 10 knots with a central pressure of 940 mb, and pass north of Tai Pei. Subsequent movement of the storm showed a more westerly direction and it was predicted to pass directly over Tai Pei. The chart shows the track of the storm and the ship's position while the barograph trace indicates the pressure changes experienced.

Hourly updates of Herb were being broadcast on local FM radio on the morning of the 31st and the forecasts indicated that the movement of Herb was more westerly than previously predicted and that the typhoon would pass closer to Kaoshiung. At 0600, Herb was in position 24.1° N, 123.8° E and its central pressure was 925 mb as it moved west at 9 knots. During the evening *Duhallow* left the anchorage area owing to another ship dragging anchor close by. In view of the deteriorating weather conditions it was considered advisable to remain outside the anchorage and head south-west to reduce the effects of the on-coming storm. The centre ultimately passed over Hsin Chu, 45 miles south-west of Tai Pei and 120 miles north of Kaohsiung.





Barograph trace from *Duhallow* for 31 July.

The following details have been extracted from the observations taken during the period.

Date and time	Pressure	Wind Dir'n	Force	Sea Ht (m)	Swell Dir'n	Swell Ht (m)	Remarks
July							
30th 0000	1000.4	Lt airs		Calm	SW	1	
0600	998.1	NW	3	1	NE	2	
1200	995.2	NNW	7	2	NW	2	
1800	994.3	NxE	7	4	N	4	Vessel sails south.
31st 0000	994.2	NW	6–7	2.5	NW	5	
0600	993.0	WNW	9	4	NE	4	A/C 090°.
1000	987.2	W	10	—	—	—	Anemometer propeller blown off and crash lands on poop deck.
1200	988.4	W	10	4	NW	6	Very heavy rain. Lightning.
1800	989.2	W	9	6	NW	5	
Aug.							
1st 0000	992.8	WSW	7–8	3.5	WSW	5	
0600	995.0	SW	7	5	SSW	5	
1200	1000.2	S	7	5	SW	4.5	
1800	1001.7	SE	5	2	S	3	Hove to.
2nd 0000	1003.7	S	6	2	S	3.5	A/C towards anchorage area.

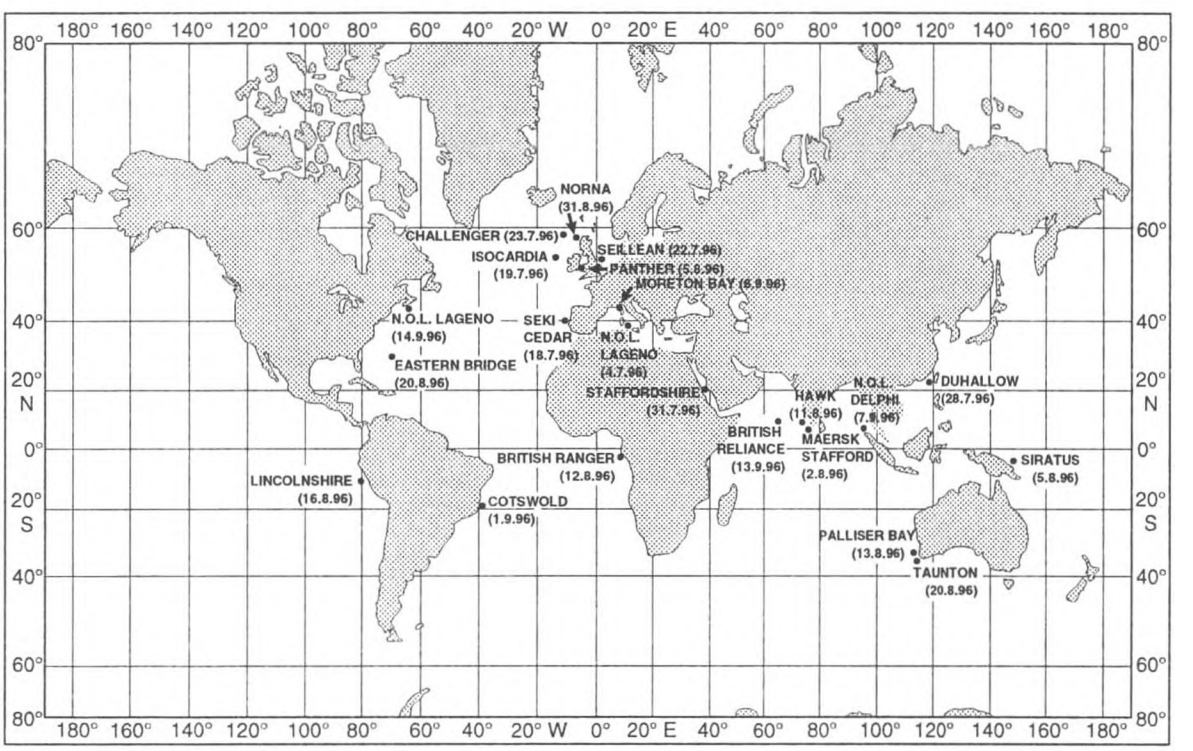
Herb was downgraded to a tropical storm on 1 August at 1000. After its passage the sea conditions remained rough and re-anchoring was not achieved until the

morning of 2 August. The closest approach of the vessel and typhoon was approximately 190 n mile on 31 July at 1800 UTC. On the return approach to anchorage (3 n mile offshore and two days after the storm) the following observations were also made: (a) a line of flotsam about 20 m wide stretching north-south along the coast, separating dark-blue offshore waters from the lighter blue of the coastal water, (b) inshore of the lighter-coloured water, the water was brown and muddy-coloured.

The line of flotsam was moving at around 1–2 knots out to sea, followed by the spreading area of brown water. This movement of water and build-up of flotsam was assumed to be a result of the passing of the typhoon with the subsequent outflow of rivers swollen with mud slides from the mountains and filled with the debris of destruction.

During the next days at anchor, the local news reported that typhoon Herb was the worst storm to affect Taiwan for 30 years. Television news showed scenes of widespread floods, landslides and destruction.

Position of ship at 1200 UTC on 31 July: 21° 48′ N, 120° 12′ E.



Position of ships whose reports appear in *The Marine Observers' Log*

HURRICANE 'HORTENSE'

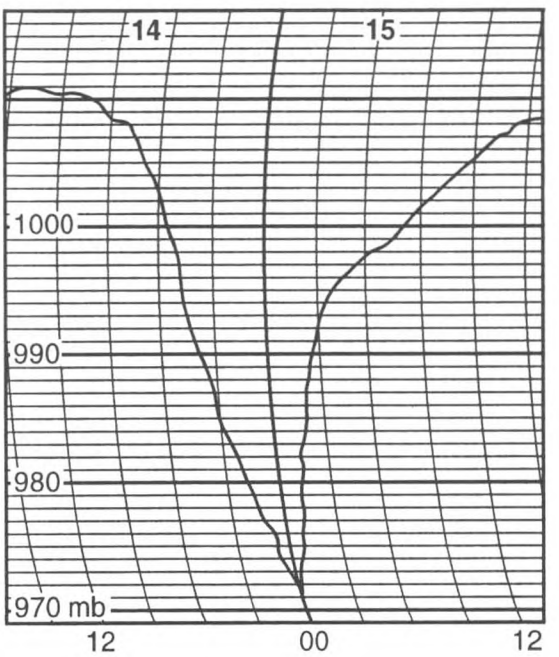
North Atlantic Ocean

m.v. *N.O.L. Lageno*. Captain C.R. Short. New York to Halifax, N.S. Observers: the Master and ship's company.

14–15 September 1996. First indications of the development of tropical storm Hortense came from information received on the 8th. At this time Hortense was in position 16.2° N, 63° W with winds of 50 knots and travelling on a course of 280° at 8 knots. The storm was upgraded to hurricane status on the 9th as the winds increased to 65 knots or more.

The ship was due to pick up her Halifax pilot at 0300 UTC on the 15th but was told that no cargo would be worked until 0600. The barometer read 1010 mb and weather conditions were fair but weather reports said that Hortense would pass during the night. The Master aborted the port entry and, as there was no shelter for ships within 100 n mile, the decision was made to gain as much sea room as possible and ride out the storm.

In the nine hours between 1500 on the 14th and 0000 on the 15th the pressure dropped almost 40 mb, as the barograph trace shows, and the wind increased from force 4 to force 12, raising the wave height from 2 m to 10 m. During this time the



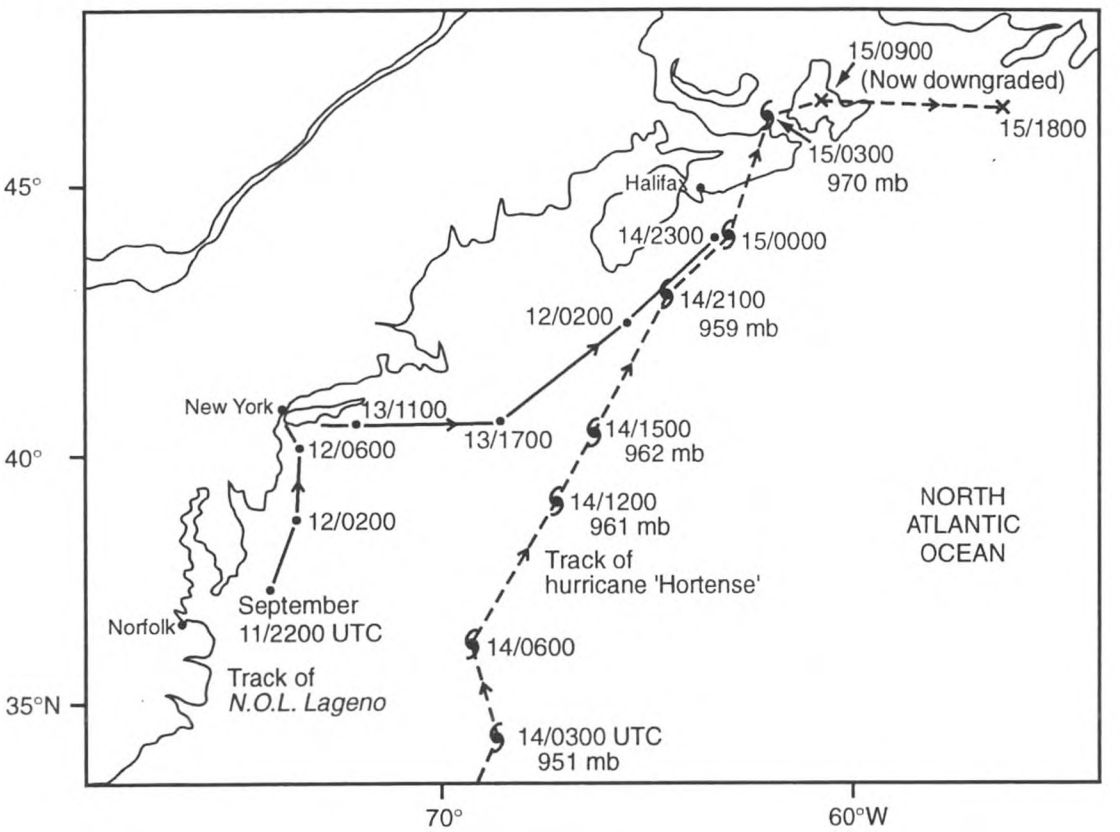
rain also increased to heavy, driving conditions which, coupled with the sea spray reduced visibility to about 100 m. The visibility was sufficient for the wind direction to be determined and thus keep the ship's head into the wind. The ship was on Slow Ahead at approximately 9 knots but no headway was made.

The following observations were made during the period, and the chart shows the location of the storm and the ship's position.

Date and time		Temperature			Pressure	Wind	
		Air	Wet-bulb	Sea		Dir'n	Force
14th	1500	18.8	18.8	18.9	1008.4	E	4
	1900	19.3	19.3	—	998.3	E	7
	2100	20.0	20.0	19.8	984.7	ENE	9
	2300	18.2	18.2	—	976.4	E	12
15th	0000				970.5	E×N	6/7
	0300	18.1	17.0	18.5	990.8	WNW	8
	0600				1000.7	W×S	7

At 2300 on the 14th the wind was E'ly, force 12 but then died down and the rain stopped. On board it was suspected that the ship was in the eye of the storm (thought to be about 15 n mile in diameter); previously the ship's course had ranged between 080° and 120° but as the eye passed over, the observers predicted that the wind direction would quickly change.

As the eye passed, the wind was SW×S'ly but quickly veered to W'ly while the speed increased to force 9. The hurricane was downgraded in the early hours of the 15th.



No heavy damage was received and the greatest roll was to 23° which occurred on an occasion when the ship altered course from east to west.

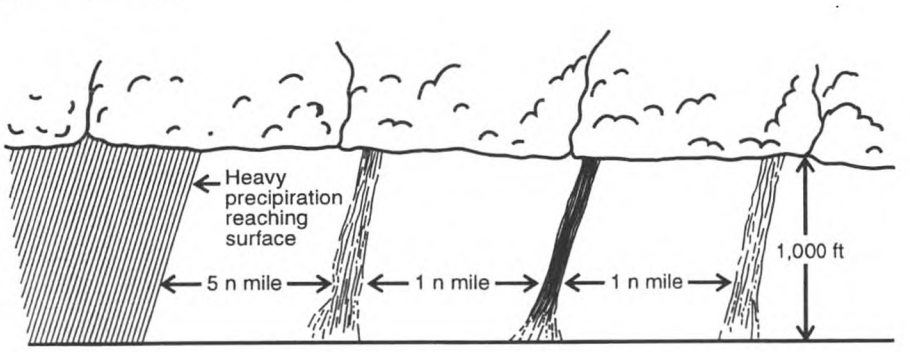
Position of ship at 2300 UTC on the 14th: 43° 44′ N, 63° 26′W.

WATERSPOUTS

Indian Ocean

m.v. *Taunton*. Captain L.J. Hesketh. Gladstone to Fos. Observers: the Master, Mr K.A. Maltby, Chief Officer, Mr T.W. Noronha, 3rd Officer and Mr C.D. Joshi, Radio Officer.

20 August 1996. During the morning watch, at 0115 UTC while the vessel was 25 n mile south-west of Cliffy Head, Western Australia, and on a heading of 284°, three waterspouts about 5 n mile south-west of Cliffy Head were observed. Two waterspouts, each about a mile to the east and west of the central one were not as well formed and looked more like two columns of thick smoke rising from the sea to the sky, see sketch.



The waterspouts formed from stationary cumulonimbus clouds whose bases were at about 1,000 feet above sea level and running almost parallel to the sea surface. About 5 n mile west of the spouts there was heavy precipitation reaching the surface.

Weather conditions at the time were: air temperature 15.8°, wet bulb 13.5°, pressure 1005.7 mb, wind WNW'ly, force 6.

Position of ship: 35° 21′ S, 116° 06′ E.

Mediterranean Sea

s.s. *Moreton Bay*. Captain G.J.H. Peaston. Salerno to La Spezia. Observers: the Master, Mr S. Azim, 3rd Officer, Mr P.E. Garner-Richards, Cadet and Mr B. Coulson, SM1.

6 September 1996. At 0850 UTC the vessel was 7 n mile off Isola Capreaia; there were large numbers of cumulus and stratocumulus clouds showing moderate or strong vertical extent covering the sky, and rain was observed passing at 6 n mile on the starboard bow.

A small waterspout started to build up in a funnel shape from the sea surface at a distance of about 3 n mile from the ship, 2 points on the starboard bow. A band of dark clouds and mixing of smooth and rough sea was also observed. The waterspout rapidly increased in height to about 300 m and showed a diameter of 20 m. It was moving in a southerly direction as the ship steered a northerly course.

Within three minutes the spout was on the starboard beam at a distance of about 3 n mile where its height decreased to 100 m as it dissipated. It was thought to be a fair-weather waterspout.

Weather conditions at the time were: air temperature 25.5°, wet bulb 24.0°, pressure 1015 mb, wind NW'ly, force 4.

Position of ship: 43° 03′ N, 10° 01′ E

CORPOSANTS

North Atlantic Ocean

m.v. *Eastern Bridge*. Captain S.J. Honey. Port Talbot to Mobile. Observers: Mr M.R. Courtney, 2nd Officer and Mr M.R.D. Gunaratne, AB.

20 August 1996. Whilst on a heading of 236° at 16 knots the vessel had been in an area of frequent scattered thunderstorms for over 24 hours. During the 12–4 watch (04–08 UTC) it was noticed that the ship's aerials on the monkey island were buzzing, it was believed, due to the highly-charged atmosphere. At 0650 a light shower began as a thunderstorm passed about 2 n mile to starboard and the buzzing noise increased in volume. This was due to the fact that light streamers had formed on the starboard bridge wing flood-light giving the appearance of a single intense violet light on the surface of the 'flood', diffusing into flat, fan-like brushes about 5 cm long and 3 cm wide. An additional streamer was discovered on the after outboard corner of the bridge wing although this one was only about 2 cm long and not so fan-like.

The buzzing noise continued as the streamers skittered about. When a hand was extended forward of the front of the bridge wing (but not behind it) streamers appeared on the ends of the fingers, accompanied by the now familiar buzzing or

crackling noise although no sensation was felt. If the hands were waved around, the brushes emanated from all the fingers at once but from only two or three of them if kept still.

After about 15 minutes the lights faded away but the buzzing noise continued and it was found that the phenomenon had transferred itself to the tips of the whip aerials on the monkey island. At 0720 the lights and the noise disappeared with the onset of a heavy rain shower.

Weather conditions at the time were: air temperature 22.7°, wet bulb 19.8°, pressure 1020.2 mb, wind E×S'ly, force 3.

Position of ship: 29° 25′ N, 70° 52′ W.

Editor's note. A similar report was received from the *Providence Bay* where, on 16 July 1996 in the Indian Ocean, Third Officer C.P.J. Robins, Cadet W.B. Roberts and SM1 P. Neale experimented with the phenomenon which appeared on the tips of whip aerials, the front corners of the bridge wing bulwark and also the azimuth mirror. By raising their hands they found that the charge transferred to up to four fingers on one hand while the blue or deep-violet sparks subsided on the bulwark and mirror, only to return when the hands were lowered.

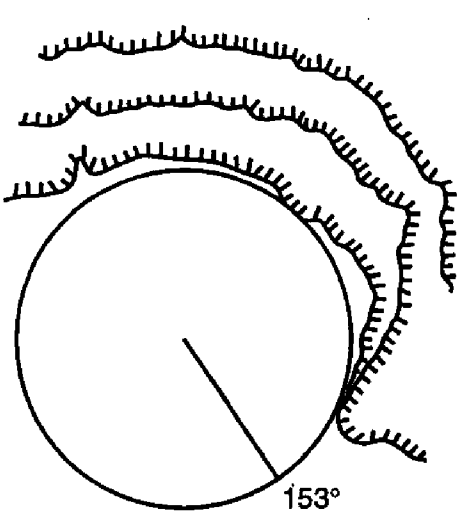
DUST

Red Sea

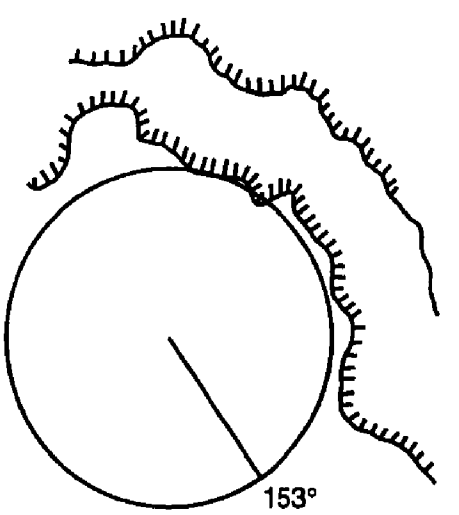
m.v. *Staffordshire.* Captain R.A.F. Edwards. Yanbu to Houston. Observers: Mr A.S. McCarlie, 2nd Officer and Mr N. MacLeod, Deck Cadet.

31 July–1 August 1996. At 2200 UTC during the morning watch attention was drawn to a distinct radar echo on the 3-cm BridgeMaster radar (set on 24-n mile range) at a steady distance of 10 n mile on the port beam, increasing in intensity into a semicircular formation around the pre-set 10 mile VRM. It had a pronounced leading outline which dispersed to the edge of the radar screen. The auto clutter function was turned off and the set was adjusted to improve the quality of the picture. The echo was visible on the 10-cm screen but it was not nearly as pronounced.

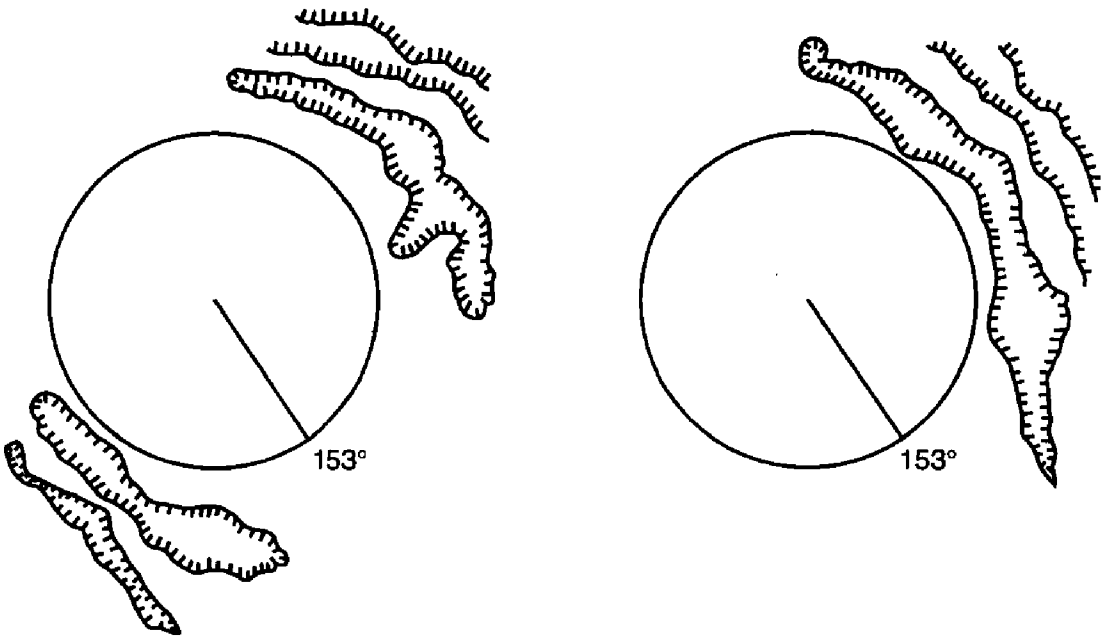
Close examination of the echo was made throughout the watch and the data was logged, see diagrams; the findings were indicative of dust particles in the atmosphere, a phenomenon frequently observed in the Red Sea.



31 July
2200 UTC



31 July
2300 UTC



1 August
0000 UTC

1 August
0100 UTC

The ship's heading was 153° at 16 knots and the weather conditions at the time were: air temperature 32.5°, wet bulb 28.0°, pressure 1002.8 mb, cloud cover 2 oktas, visibility 12 n mile.

Position of ship at 2200 UTC on 31 July: 19° 48.6′ N, 39° 24.2′ E.

CETACEA

Gulf of Guinea

s.s. *British Ranger*. Captain K.G. Peacock. Forcados to Qua Iboe. Observers: the Master, Mr P. Belcher, 2nd Officer, Mr K. Mason, Cadet and ship's company.

12-13 August 1996. At 1600 UTC several large whales about 15 m long were sighted about a mile from the vessel. They moved closer, swimming lazily on the surface, the group consisting of three adults. When one of them sounded, a distinct blowhole ridge could be seen followed by a short dorsal fin and a very raised, humped back. A long curved flipper then came into view showing a brilliant-white underside. The flukes were raised high from the water when diving and they carried a distinct notch in the centre. It was decided that they were Humpback Whales.

Their behaviour led to a few comments from the observers, the behaviour being that one whale separated from the others and circled the anchored ship at a distance of no more than 10 m whilst the other two became rather 'friendly', remaining very close together on the surface and becoming very active with lots of movement. After about an hour all the whales disappeared from sight.

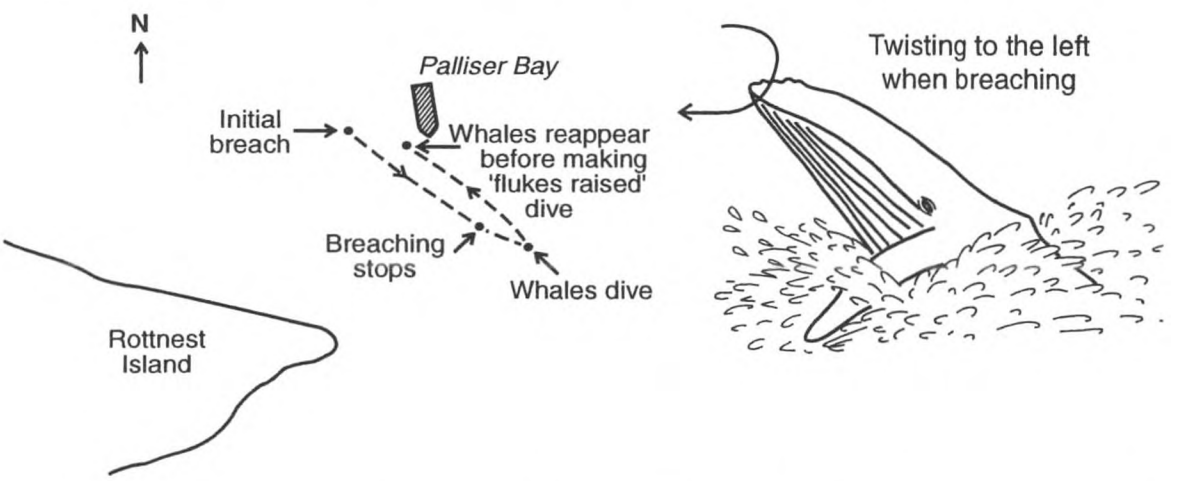
The next day, at 1500 whilst the vessel was secured to the Qua Iboe SBM and waiting to load, the whales returned. Two of them approached the floating loading hoses so closely that they almost touched them while the third whale started to leap from the water until only its flukes were touching the surface. Shortly afterwards they all disappeared.

Position of ship at 1600 UTC on the 12th: 04° 13′ N, 08° 03′ E.

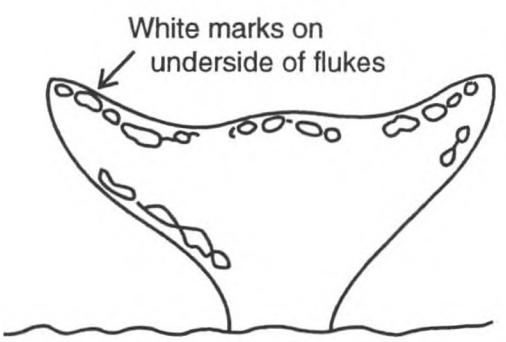
m.v. *Palliser Bay*. Captain D.K. MacCorquodale. Cape Town to Fremantle. Observers: the Master, Mr A. Ward, 3rd Officer, Mrs A.J. Ward, Supernumerary and ship's company.

13 August 1996. At 0200 UTC whilst at anchor 1 n mile inshore of Rottnest Island, awaiting a berth at Fremantle, two adult Humpback Whales were spotted breaching repeatedly. They were rising out of the water until approximately two-thirds of their length was clear of the surface before twisting to the left through almost 180° and then splashing back down. Both whales continued to do this together as well as individually about 24 times each; during this time they moved in a roughly south-easterly direction. Once the whales had stopped breaching they swam side by side on the surface for a further five minutes before diving.

The first two sketches show the sequence of events.



Approximately 10 minutes later first one and then the other whale appeared 1.5 cables off the starboard bow before diving in a characteristic 'flukes raised' manner. This gave a perfect opportunity to observe the flukes. While one whale had a remarkably uniform dark-grey set of flukes, the other had a series of white markings along the edges, as shown in the final sketch.



After this, only their blows could be seen as they headed off in a northerly direction.

At the time of the observation the sea temperature was 17.7°, the wind was S'ly, force 4 and there was continuous drizzle.

Position of ship: 31° 58′ S, 115° 36′ E.

South Pacific Ocean

m.v. *Lincolnshire*. Captain C.O. Thomas. Callao to Balboa. Observers: the Master, Mr D.J. Levins, 3rd Officer and ship's company.

16 August 1996. At 2215 UTC whilst on a course of 321° at 15 knots a large disturbance was noticed in the water off the port bow at a distance of 3 n mile. At first it was thought to be a large shoal of fish as there was considerable activity from a flock of birds directly above it but as the vessel drew nearer the cause was identified as a school of about 40 dolphins moving on a parallel course to the ship.

What interested the observers was the fact that the dolphins were jumping out of the water in what appeared to be a synchronized line formation which continued for about 40 m until they submerged. The dolphins continued to do this in a square pattern of about 40 m for each side, always appearing to hold their line; there were about 15–20 dolphins jumping each time with the rest following behind.

Initially, they were thought to be Common Dolphins (*Delphinus delphis*) but on closer inspection of the grey underbelly and pointed shape of the flippers and dorsal fin, *The Seafarer's Guide to Marine Life* by Paul Horsman was consulted and they were found to be Spinner Dolphins (*Stenella longirostris*). It was assumed by the observers that the dolphins were following a shoal of fish as there was considerable bird activity throughout but while endeavouring to see the dolphins, nobody took the time to identify the birds!

Two days later, just after sending the 1800 weather observation Mr I.D. Handford, Second Officer and Mr Levins saw a school of dolphins jumping vigorously in and out of the water. They were again identified as Spinner Dolphins by their fins and flippers and by the way in which they leaped high out of the water before turning in mid-air and landing horizontally. This behaviour continued until they were out of sight

Position of ship at 2215 UTC on the 16th: 09° 02′ S, 80° 11′ W.

Little Minch

f.p.v. *Norna*. Captain D.L. Rattray, O.B.E. Fishery patrol duties off South Uist, Outer Hebrides. Observers: Mr A.R Davidson, 1st Officer, Mr R. Whyte, 1st Officer and Mr J. Kane, Seaman.

31 August 1996. At 1805 UTC a large Killer Whale with a tall, narrow dorsal fin about 2 m high was observed half a mile distant, swimming towards the ship. A minute or so later a second whale, with a dorsal fin 0.9–1.2 m high, appeared from the same direction. Suddenly, the larger whale 'porpoised' and stuck its tail 1.8–2.4 m in the air and smacked the water with its flukes, repeating the action a further three times at roughly 10-second intervals.

Soon after this three smaller whales (dorsal fins 0.6–0.9 m high) were seen swimming quickly, just breaking the surface and arriving at the point where the 'tail-slapping' had taken place — now some 3 cables off the port beam; there were no further sightings of the Killer Whales.

The sightings took place about 7 n mile off the Hebrides in an area where there were herring running, and at the time the wind was SW'ly, force 4 while the sea was slight to moderate with no swell. The sea temperature was 13.0°.

Position of ship: 57° 14′ N, 07° 01′ W.

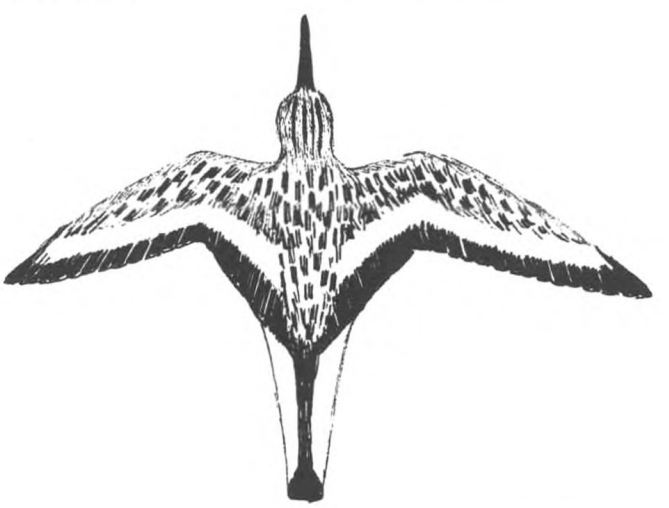
BIRDS

North Atlantic Ocean

m.v. *Seki Cedar.* Captain P.W. Jackson. Barcelona to Sheerness. Observers: the Master, Mr I.D. Tranter, Chief Officer and Mr D.J. Yates, Chief Engineer.

18 July 1996. At 1900 UTC whilst 39 n mile west of Cape Mondego a sandpiper was noticed around the vessel for about an hour. It walked mostly in quick and short bursts at a distance of about 30 m from the bridge and also made numerous flights some of which were parallel to the ship although marginally faster but lower than the bridge, giving a good flight view from above.

Hand-held and wing-mounted binoculars were used to view the bird, and the following points were noted. It was about 20 cm long and had a black 'medium' bill (not thin or pointed) and black legs; the head and chest were a pale rust colour which gave way to a pure white underside. When stationary, the bird's back was 'spangled' with white and black, or perhaps dark-brown but in flight a broad white wing-bar was very noticeable. (See sketches.)



Other features noticed in flight were its streaked rusty crown, light-rust coloured leading edges to the wings, narrow and dark trailing edges, and white edges on the tail which itself had a narrow dark-brown central stripe leading to a dark tail tip.

The exact species was not known but the observers' best guess was a Sanderling in summer plumage although the bill seemed to be a little large and the bird was not in the summer range of a Sanderling.

Position of ship: 40° 13′ N, 09° 54′ W.

North Atlantic Ocean

R.R.S. *Challenger.* Captain R. Bourne. Vessel on scientific station off the Outer Hebrides. Observer: Mr P. Burridge, Chief Officer.

23 July 1996. At 0600 UTC when the ship was 50 n mile west-south-west of Berneray, in the Outer Hebrides, a [Grey] heron landed on board and took up a roost on the breasthook. It appeared to have difficulty flying against the NW'ly breeze of force 4 and made an ungainly landing. These factors suggested that it was in need of a rest. Once the bird had boarded it remained 'hunched up' with its legs slightly bent and spread wide to balance on the gently moving ship; out of 'his' element like this he looked pathetic and not at all happy.

On closer inspection his back was not grey all over, as shown in the identification book, but the plumage was mottled with black and lighter greys (in the same way as the grey, blue and white camouflage outfits perhaps worn by the army in northerly latitudes). The markings were not regular so gave the bird a scruffy, unkempt appearance. It may have been that this was a juvenile or possibly a regional 'morph', or more probably it had not had an opportunity to tidy up.

The heron departed at 0633, heading generally south-by-east and Mr Burridge wished it luck in finding "some slightly shallower water where its feet could touch the bottom".

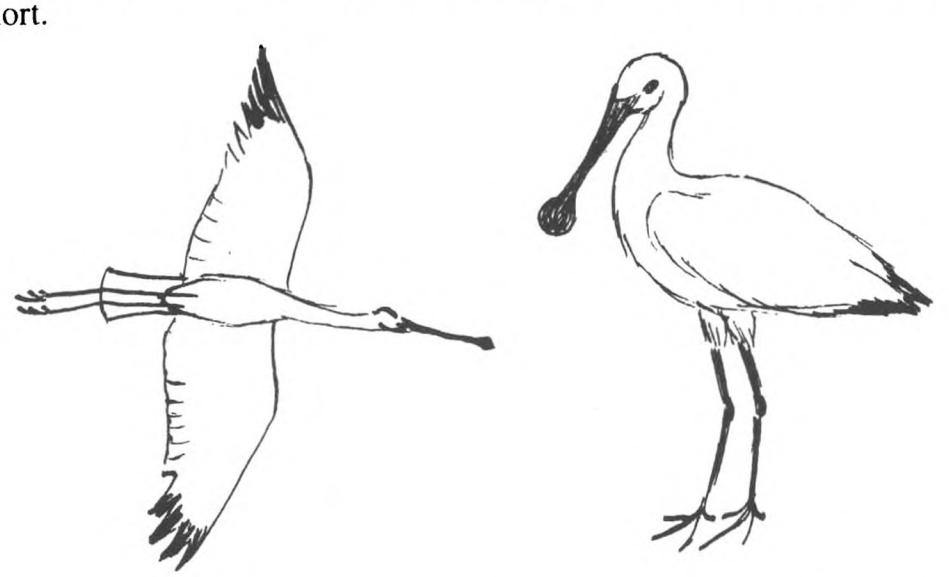
Position of ship: 56° 27.7′ N, 08° 58.5′ W.

Arabian Sea

s.s. *British Reliance*. Captain N. Greig. Singapore to Fujayrah. Observers: the Master, Mr R. Miller, 2nd Officer and members of ship's company.

13 September 1996. At about 0700 UTC a small group of three birds was noticed flying in the vicinity of the vessel; they were quite large but of slender build. After a while of watching them it was concluded that they were quite agile flyers too as they were frequently observed gliding and diving towards the sea. They also seemed to be a little timid because they did not land on deck until darkness.

Their features were as follows: body length 80–100 cm (including beak and legs); wing-span 70–90 cm; legs very slim and about 25 cm long. The birds were white in colour except for the wing tips, the legs, the beak and its base, all of which appeared very dark or even black. The beak was very long and thin with a characteristic, flattened 'spoon' shape, the lower part of which was later observed to be orange in colour. The head was small while the neck was thin and rather long, this was especially visible during flight, see sketches. The tail was very short.



At the time of their approach, the vessel was almost 400 n mile from the nearest land. As there was no suitable literature on board, no positive identification could be made but the bridge team agreed that the birds belonged to the Spoonbill family.

Only two birds were noted resting on the forecastle on the following morning and they had also gone by 0400, having left in an unknown direction.

Position of ship at 0600 UTC on the 13th: 16° 12′ N, 66° 30′ E.

BAT

St George's Channel

m.v. *Panther*. Captain N. Anders. Alongside, Rosslare. Observers: the Master, Mr A. Facey, 2nd Officer, Mr E. Morton, 3rd Officer and members of ship's company.

5–6 August 1996. A bat had been seen flying around the ship on the 5th when the vessel was near the English coast; at one instant it had ventured inside the wheelhouse causing something of a panic but it was coaxed out and was not seen again.

On the morning of the 6th whilst removing the magnetic compass canvas cover for inspection, the Second Officer spotted the unfortunate little fellow cowering for shelter. The bat was caught and wrapped in a towel to dry it and help it warm up as it appeared to be shivering.

The Irish Department of Agriculture was contacted and a representative came down to the ship but the bat flew into a hole in the wheelhouse deckhead panelling and all efforts to locate him were in vain, so the representative had to leave alone.

The bat was 4.5 cm long from nose to tail while its wing-span was 16 cm approximately. Its limbs, wings and ears were hairless (all bare skin was very dark, nearly black) but its body hair was grey-brown in colour; its ears had rounded tips. The head brought to mind the shape of, say, a fox's head in miniature but with a swollen forehead; in other words, the nose did not have the inverted heart-shape of a vampire bat.

It was feared that the bat's story would not have a happy ending but when Mr Facey later rejoined the vessel he was informed by the Master that the bat came out of the deckhead space on the 7th as the ship was leaving the berth. The bridge wing door was opened and it flew away towards land, so hopefully he found something to eat and survived.

Position of ship: 52° 15′ N, 06° 20′ W.

BIOLUMINESCENCE

Arabian Sea

m.v. *Maersk Stafford*. Captain R. Banton. Ko Si Chang (Thailand) to Yanbu. Observer: Mr B. Murnin, 3rd Officer and members of ship's company.

2 August 1996. At 2045 UTC whilst on a heading of 291° a whitish brilliant glow began to be seen around the hull of the ship and on a few white wave caps close to it. A glow was also observed on the horizon to starboard and resembled the back-scattering of lights from ashore although land was slightly round to starboard from the glow and about 70 n mile away.

The wind was increasing from NW×W'ly, force 4–5 at 2105 and became force 8. The brilliant-white glow then became a brilliant luminous green and stretched out as far as the eye could see, through 360°. The wind was now NW×W'ly, force 9 and the sea was a mass of white caps all glowing a brilliant, bright, luminous green giving the appearance of an almost continuous green blanket everywhere. It was noted at this point that the 'back-scattering' of light seen earlier must have been the bioluminescence at a distance. A call was made to the rest of the ship's staff and several members of the company came to the bridge to view this brilliant spectacle.

Moderate rain was encountered at 2145 and the brilliance decreased a little to a whitish-green colour with occasional brilliant luminous green around the vessel and could only be observed on white caps up to a few miles from the ship. Looking back aft, the sea was still observed to be a brilliant luminous green towards the horizon.

At 2155 the vessel encountered heavy rain. Now, only a bright whitish-green colour was to be seen around the ship's hull and on several white caps close by. The rain had cleared by 2205 and only a dull-white glow was left around the hull; the sky was clearing at 2210 and by this time the bioluminescence had ceased and the wind had decreased to NW×W'ly, force 3.

During the most brilliant period of the event several tests were carried out. The echo sounder was switched on using all transducers but this had no effect; a spot-light was shone on the water and the only effect was that no bioluminescence showed within the light. The aft poop deck lights were switched on to light up the stern along with the sea and wake around it, the bioluminescence only appeared to come down the ship's hull, disappear when within the area of light and reappear once clear of it.

At the time the air temperature was 27.2°, wet bulb 25.0°, sea temperature 27.4° and the night was clear with no moon.

Position of ship at 1610 UTC: 07° 17′ N, 76° 52′ E.

m.v. *Hawk*. Captain J.A. Horgan. Singapore to Fujayrah. Observers: Mr C. Ryan, 3rd Officer and Mr N. Allado, GP1 AB.

11 August 1996. For several nights while the ship was crossing the Arabian Sea bioluminescence was observed around the hull and in the wake. On the 11th, between 1700 UTC and 1830 UTC the intensity of the phenomenon was greater than usual. It was so intense that the watchman on the bridge wing had to avoid looking at the area around the ship because his night vision was being affected.

At about 1800 the watchman reported lights in the distance and speculated that they were fishing vessels. On inspection, the Third Officer saw a squall ahead which had increased the sea state and generated 'white horses'. The lights reported were in fact the white horses whipped up by the squall, and the bioluminescence caused these waves to glow for their breaking period which was 3–5 seconds.

Once inside the squall the sea seemed to glow an eerie pale-green as the bioluminescence affected the increasing number of waves. As the ship passed through the squall the seas decreased and the bioluminescence was once again restricted to around the hull. At the time of the observation the ship was following a course of 153° and the visibility was 6–8 n mile.

Position of ship at 1830 UTC on the 11th: 09° 34′ N, 75° 43.3′ E.

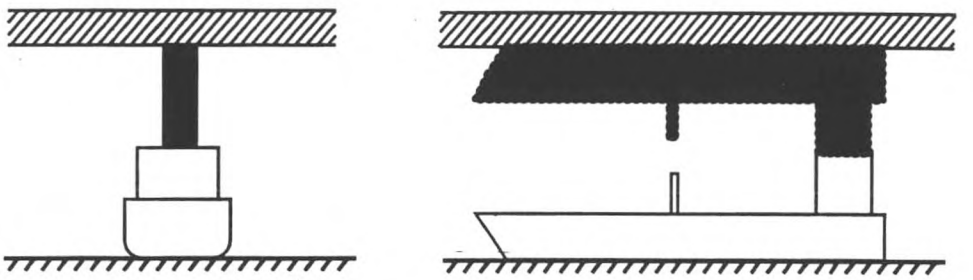
ABNORMAL REFRACTION

North Sea

m.v. *Seillean*. Captain F.W. Hamond. Offshore installation to River Humber. Observers: Mr V.A. McAdam, 1st Officer and Mr J. Sellick, 2nd Officer.

22 July 1996. At 1830 UTC the vessel was on a course of 182° at 8.5 knots when superior images of two ships were observed. Just above the horizon there was a thin dark band of (maybe) stratocumulus cloud, and it was up to this band that the refraction was seen.

The sketches show (a) one vessel that had recently overtaken *Seillean* and was viewed from the stern at a distance of 8 n mile; this vessel appeared to have a stretched funnel up to the dark band above the horizon.



(a) (b)

Sketch (b) shows a vessel which was at a distance of 12 n mile and was seen to have a totally inverted ship image above it, joined at the accommodation block. The images were observed for about an hour before gradually fading away as the layer in the sky disappeared.

Position of ship: 53° 48′ N, 00° 23′ E.

RAINBOW

Strait of Malacca

m.v. *N.O.L. Delphi*. Captain D. Tracey. Singapore to Colombo. Observers: Mr C.G. Puttock, 3rd Officer and Mr A. Crosland, Radio Officer.

7 September 1996. While passing Rondo Island at 0218 UTC a rainbow was sighted on the port bow and it seemed as though the ship would pass through one end of it. As the vessel approached, the rainbow became almost crystal-clear in definition and seemed to shorten in length.

Even so, it was always a shallow feature, estimated to be about 150 m wide while the top of the arc was at about 30 m. It was possible to make out all seven colours of a primary bow, with red uppermost and violet on the lower edge. As the vessel passed through it, the nearer end of the rainbow 'settled' on a container but alas, no gold was found on board!

Position of ship: 06° 08.3′ N, 95° 14.4′ E.

Editor's note. A lunar rainbow was reported by Third Officer M. Vallins, Cadet D. Brighton and OS F. Punay on 19 August at 1040 UTC whilst the *British Success* was on passage from Fujayrah to Whangarei. No colours were noted and the rainbow lasted for about five minutes.

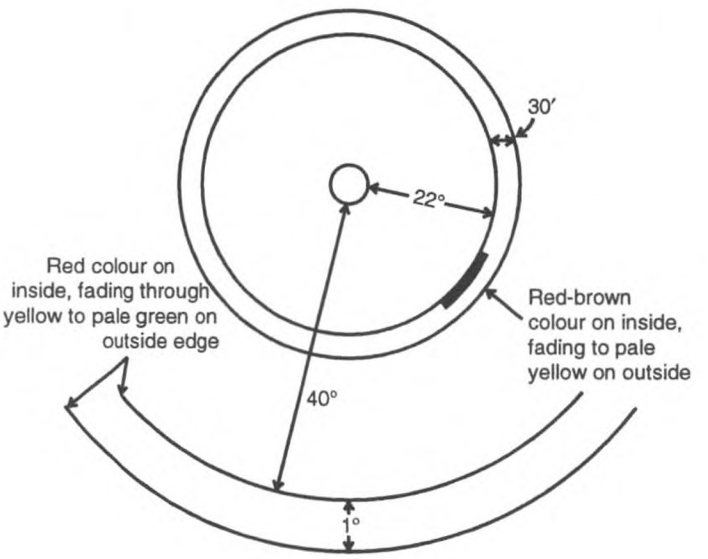
HALO

Bismarck Sea

m.v. *Siratus*. Captain D. Freeman. Geelong to Kasim. Observers: the Master, Mr C. Smith, 2nd Officer and Mrs Smith, Supernumerary.

5 August 1996. At 0300 UTC a bright band was noticed around the sun, covering 360° and about 22° from it. The ring was approximately 30 minutes of arc in depth and was coloured reddish-brown nearest the sun but fading to pale-yellow away from it.

A second ring was also visible some 40° vertically below the sun, see sketch.


30′
22°
Red colour on inside, fading through yellow to pale green on outside edge
Red-brown colour on inside, fading to pale yellow on outside
40°
1°

This ring covered an arc of roughly 30° and was about 1° in depth; the edge nearest the sun was bright-red and then the colour faded through yellow to pale-green on the outer edge. After 15 minutes the second ring was obscured by cumulus cloud. The cloud cover was 8 oktas of all types but mainly dense cirrus and altocumulus

Position of ship: 05° 37′ S, 147° 22′ E.

Editor's note. A lunar halo was reported from the *Providence Bay* on 23 September while in the Bay of Bengal. Visible between 1400 UTC and 1446, it began as a narrow circular band which gradually thickened and increased in brightness while also increasing its diameter. Developing altocumulus cloud then halted observations.

GREEN FLASH

Mediterranean Sea

m.v. *N.O.L. Lageno.* Captain P.D. Davies. Suez to New York. Observers: the Master, Miss L.M. Butler, 3rd Officer and Mr E. Rosales, AB.

4 July 1996. A clear and distinct green flash was observed at sunset, at 1838 UTC. After watching carefully for many a sunset, this was the first seen by the Third Officer.

The sun appeared unusually bright as it was setting against the open sea and, just as approximately the last sixth of the sun was dipping below the horizon, it was noticed that it was developing green edges. The remaining segment of the sun rapidly turned a very brilliant green which seemed to last for several seconds before disappearing from sight.

At the time the air temperature was 22.5°, wet bulb 20.4°, pressure 1017.5 mb, wind N'ly, force 3 and the visibility was excellent.

Position of ship: 37° 15.7′ N, 11° 25.2′E.

MAGNETIC ANOMALY

North Atlantic Ocean

m.v. *Isocardia*. Captain C.M. Scott. Sullom Voe to Quintero. Observers: the Master, Mr F. Spencer, 3rd Officer and Mr S. Crookes, Deck Cadet.

19 July 1996. At 1000 UTC whilst passing the island of Rockall in restricted visibility a close watch was being maintained on the magnetic compass to monitor the changes which may be caused by the area's reported magnetic anomaly. When the island was bearing 017° at 12.03 n mile, at about 1008, the Cadet noticed and commented on the fact that the deviation for the ship's head appeared to be decreasing although the vessel's head was remaining steady at 245° G; this was followed almost immediately by the off-course alarm sounding. Upon investigation, the magnetic head was found to have changed from 265° to 260°; the Master was surprised by the severity of the anomaly and remarked that in all his time at sea he had never seen such a severe one. Shortly after this the magnetic compass returned to its original heading.

Position of ship: 57° 24.4′ N, 13° 47.5′ W.

MISCELLANY ...

An additional mélange of maritime sightings

Abbey. 20 July 1996. At 2000 UTC in position 34° 46′ N, 20° 14′ W, Third Officer N. Barber and Second Officer D. Hargrave spotted a whale on the surface, about 0.5 cable off. The estimated length of the whale above the surface was 15 m and it had a small dorsal fin located to the rear of the visible area. The whale dived as the vessel passed but did not raise its flukes. It was thought to have been a Fin Whale.

Arctic Ranger. 17th July 1996. Whilst engaged in fishing operations for cod 25 n mile west of Bear Island, in position 74° 33.8′ N, 17° 08.7′ E, Humpback Whales were sighted close to the vessel, on one occasion close enough for the Radio Officer M. Allison to hear the sound of exhalation when one whale was blowing.

(*Editor's note*. Kelly Hughes, zoologist comments:

"Humpbacks make annual migrations to feeding grounds which are situated at high latitudes where the water is cold. During the summer months plankton is abounding in these areas because both light and nutrients are plentiful for the photosynthesizing phytoplankton which, in turn, feeds the zooplankton. One type of zooplankton, and the largest, is krill. The krill is the main reason that the Humpbacks have travelled thousands of miles to feed in these waters. Much of the food is stored as blubber which allows the whales to make the long migration back to the breeding grounds in the winter at lower, warmer, latitudes. They generally do not feed during this migration, nor do they feed during the breeding season and so the feast at the feeding grounds has to see them through at least six months, many thousands of miles and, for females with a calf, through lactation which obviously makes extra demands on their energy reserves. The krill is a vital part of the marine ecosystem, not just for the Humpback but also for many fish species, such as cod.")

Eastern Bridge. 2 September 1996. A brownish object though to be 'Gulf weed' was spotted off the port side of the vessel at 1340 UTC by Third Officer M. Westcott. As the object neared the vessel it was seen to be a turtle about 1 m long and 50 cm wide. Its shell appeared to be rough with 'ridges and bumps'

although this image could have been due to the angle of observation and the sunlight reflecting back from the almost calm sea. The turtle seemed unbothered by the vessel and swam just below the surface. The ship's position was 42° 27.2′ N, 47° 50.0′ W.

(*Editor's note.* Mr Neil Fletcher, of the Countryside Council for Wales considered that "this was probably a Loggerhead turtle. They have distinctive reddy-brown colouration, a heart-shaped carapace or shell and they grow to an average length of 1–1.3 m. Loggerheads normally feed in coastal tropical and subtropical waters and have a thick powerful beak to crush the shells of their prey which include bottom lving crabs, shrimps, clams, sea urchins and also fish".)

Flinders Bay. 2 July 1996. A complete 'moonbow' was seen ahead of the vessel at 1016 UTC, extending 235°–310°, the ship's course being 293°. Third Officer P.J.S. Turner, and Cadets D. Hall, S. Pepper and J. Nuttall watched it for five minutes during which time the moonbow intensified until the full spectrum of colours was seen in the light of a particularly bright and clear full moon.

Hornbeck Invincible. 23 June 1996. At 1600 UTC a large dorsal fin was sighted between 0.25 n mile and 0.5 n mile from the ship by Captain A.J. Hughes, Chief Officer J.A. MacKinnon, Second Officer T. Byrne and Chief Engineer M. Keogh. On inspection with binoculars, four large fins and one very small one were seen. One fin was 1.2–1.8 m tall, three were 0.9–1.2 m tall and the shortest was 0.6–0.9 m tall. On three occasions when heads cleared the water, a white strip was clearly seen, so they were identified as Killer Whales. The whales swam in a tight group back and forth across the stern. The ship's position was 60° 41′ N, 02° 32′ W.

Kukuwa. 25–26 July 1996. Whilst on passage from Le Havre to Conakry, the ship became infested with light-coffee coloured moths about 2–2.5 cm long. They had been seen during the previous night but arrived in great numbers on the 26th, causing problems for sailors working on deck. Captain B.N. Jones, Second Officers E. Parker and W. Thomson together with Third Officer J. Attoh concluded that the moths had probably been picked up from the Spanish or Portuguese coasts; however, with the wind being N'ly, how it happened was a mystery.

London Victory. 11 August 1996. Bioluminescence was seen at 2200 UTC by Third Officer Wayne Pearce whilst the vessel was on passage between Luanda and the US Gulf ports. He took a sample of sea water and found several match-head size points of light glowing a bright electric-blue colour. After trying varying means to get the lights to glow, he found the only way to do it was by physically disturbing the water by shaking the container.

Magnolia. 18 August 1996. Whilst heading 282° at 12 knots in the Arabian Sea, at 1600 UTC, Third Officer N.J. Aluares noted white bioluminescence which extended from horizon to horizon. It was of considerable brightness and increased only slightly when a search-light was flashed onto the water. It was unchanged when the radar was switched on and off.

Merchant Premier. 11 September 1996. Cadet Kartik Ahuja observed an unidentified bright-white light in the sky at 0530 UTC whilst in position 36° 34′ S,

86° 04.3′ E. Its bearing from the vessel was 45°, its tail began at altitude 15° and its head was at altitude 30°. It resembled a comet.

Northern Desire. 14 August 1996. At 2245 UTC, in position 47° 39′ N, 17° 03′ W, shoals of fish leaving trails of light as they passed through bioluminescence were watched by Second Officer A. Somerton and AB H. Sozostak.
Orient Star. 7 July 1996. In position 16° 35′ N, 74° 51′ W, in the Caribbean Sea, Third Officer S. Singh watched two Humpback Whales which were about 25–30 m from the port side of the ship. They were seen for only about 10 seconds during which time a bushy blow was noted from both of them. They were about 10 m long and dark-grey or black in colour. No other features could be seen owing to the rough seas and heavy swell.

Pacific Teal. 15 July 1996. In position 39° 59′ N, 153° 56′ E a school of about 20 Pacific White-sided Dolphins was observed by Third Officer R.P.C. Mitcheson, bow-riding about the ship in company with a small number of smaller dolphins about 1.5 m long.; these were probably Northern Right Whale Dolphins and were leaping from the water in unison with arched backs, keeping a greater distance from the ship than the other species. The nearest individual was distinctly brown-coloured on its upper parts; certainly, there was no apparent dorsal fin.

Repulse Bay. 26 August 1996. Whilst in the South China Sea between Hong Kong and Singapore, crepuscular rays were seen at 1000 UTC in association with a cumulonimbus cloud of very great vertical extent The cloud height was calculated to be 42,000 feet by using a radar bearing of the cloud base and sextant angle of the cloud top. The cloud was observed by Captain A.J. Leslie, First Officer M.P. Willis and Cadet S.N. Foster.

Resolution Bay. 5–6 July 1996. While the vessel was crossing the Bay of Biscay on passage to Cape Town, First Officer D. Hinson spotted two Sperm Whales, two Fin Whales and had additional sightings of a further two and six unidentified whales.

Shenzhen Bay. 16 August 1996. Bioluminescence was watched by Third Officer D. Cropley and Watchman P. McGlennan during the 8–12 watch when the vessel was in the Arabian Sea. It was first thought to be a low mist but the WSW'ly wind at force 7 did not support this idea. The phenomenon occurred in an area of water which was far less rough than the surrounding sea, although the wind was constant, and showed as a bright off-white light stretching from horizon to horizon. The bioluminescence around the hull was almost bright enough to read by.

Vine. 9 September 1996. Whilst in the eastern North Atlantic Ocean, between Puerto Bolivar and Amsterdam, strong bioluminescence could be seen around the ship where the water was agitated by its motion. The colour, noted by Captain J.M. Milloy, Extra Second Officer V.J. Titayil and AB1 J. De Los Santos, was a glowing white with a light-bluish tinge. The effect faded away from the ship although 'white horses' within about half a mile of the ship could be seen glowing faintly.

Recirculation of the Brazil Current South of 23° S *

BY M.R. STEVENSON

(Inst. Nac. de Pesquisas Espaciais, São José dos Campos, SP 12202–970, Brazil)

Brazilian participation in WOCE has been through project COROAS (Oceanic Circulation in the Region of the SW Atlantic). One component of COROAS is the study of the influence of eddies in the Brazil Current using Lagrangian drifters. This subproject represents Brazil's contribution to the SVP of WOCE. To date the drifter component has fabricated and launched 16 low cost drifters (LCDs), 15 of them off SE Brazil and one in the Polar Front of the SW Atlantic (Figure 1). Construction procedures for the drifters closely followed Sybrandy and Niiler (1991) and are considered to be representative of WOCE standard drifters. Average life expectancy of Brazilian LCDs is as yet poorly known. The duration of the transmissions after LCD launch are summarized in Table 1. To reduce the overall service costs of using ARGOS, the PTTs were programmed to turn of after different time intervals. The LCDs were launched in groups of 5: the first group being programmed to turn off after 12 months, the second group after 9 months and the third group after 6 months. Drifter 3194, launched in the Polar Front, was programmed to transmit until its loss of battery power. This drifter (3194) is still transmitting some 19 months after its deployment. It is hoped that drifter longevity for Brazilian LCDs that transmit without externally programmed time duration limits will approximate the mean values of almost 300 days obtained by other participants in SVP (WOCE,1995).

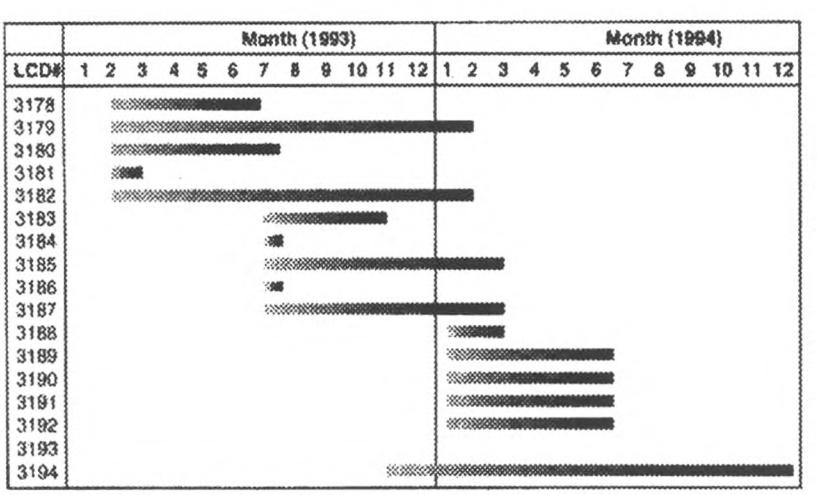


Table 1. Lifetime of the low-cost drifters.

Western Boundary Current Experiment

Five WOCE standard LCDs with surface water temperature sensors were launched on 17 February 1993, as part of a western boundary current experiment in project COROAS. A thermosalinograph, aboard the University of São Paulo, R.V. *Professor W. Besnard*, was used to locate a thermohaline front, normally

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associated with the western boundary of the Brazil Current (BC), located in the northern part of the COROAS area, off SE Brazil. The LCDs were launched in a box pattern across this western boundary of the BC, with the fifth drifter being launched within the box.

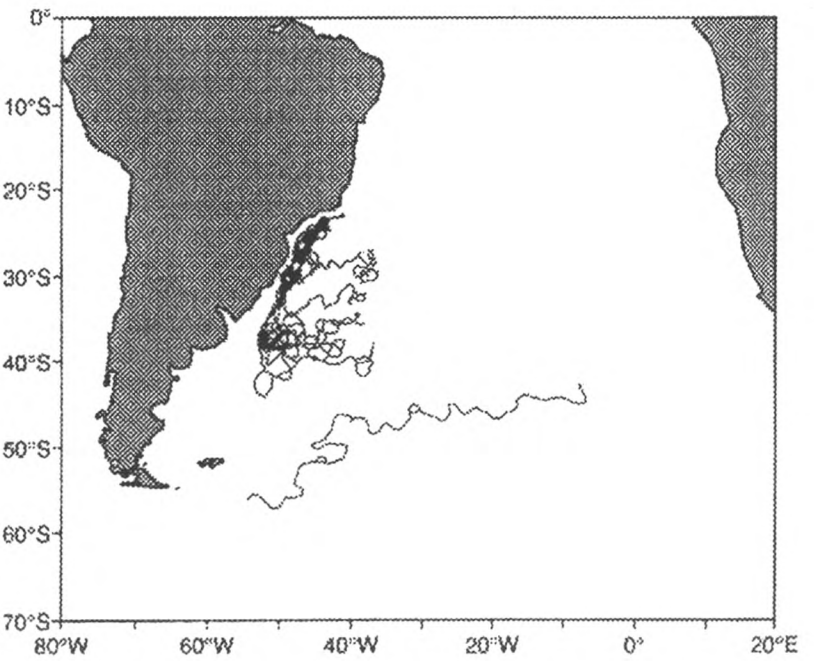

Figure 1. Tracks of Brazilian drifters released in the SW Atlantic.

Preliminary Results

All five drifters indicated the presence of eddies as they moved southwesterly within the BC. As the drifters approached the Brazil-Malvinas Confluence (BMC), one drifter moved offshore, apparently along the north side of the BMC. Upon reaching the BMC region, another drifter stopped transmitting for a period of several months. The remaining three drifters (Figure 2) moved westward, onto the continental shelf: 3178 at 28.5° S, 3179 at 30.5° S and LCD 3180 at 33.4° S. Subsequently, the three LCDs assumed northeasterly tracks along the shelf until they approximated their original deployment positions, thereby almost enclosing their circulation patterns. The recirculation period for this part of the Brazil Current varied from 115 to 161 days (3178/3180) for the three drifters, depending on the drifter and its path. Detailed examination of these trajectories shows the onshore movements to occur when the drifters approximated the current shear of cyclonic eddies. The location of some of these eddies seems to be associated with regional topographic features; this resulted in drifter tracks from the subsequent two experiments describing similar trajectories (Figure 1). Mean currents for the first experiment were to the SW (215°–226°) at 15–18 cm/s (3178/3180); the mean return currents were to the NE (31°–35°) at 5–17 cm/s (3178/3180). Mean surface water temperatures for the southbound flow were 24.8°–25.8° C and 17.6°–23.3° C for the northbound current on the shelf. Mean surface water temperature in the northerly coastal current was found to be several degrees lower than in the Brazil Current. This would be expected if this coastal current consisted of a mixture of cool water from the Malvinas Current and warm water being recirculated from the Brazil Current.

Because of the importance of eddies in the Brazil Current, kinetic energies for the mean and residual flow field were estimated. Mean kinetic energies

per unit mass (MKE) for the southwesterly mean flow and residual displacement series containing eddies were found to be 4–171 cm^2/s^2 (3180/3179), and 1,332–4,207 cm^2/s^2 (3178/3180), and for the northeasterly flow were 12–145 cm^2/s^2 (3179/3180) and 2.384–4,661 cm^2/s^2 (3178/3179), respectively. While the mean velocity for the Brazil Current was found to be slightly greater than the equatorward coastal current, the eddy kinetic energy (EKE) in the returning flow appears to be equal or greater than that found in the Brazil Current. Overall, EKE energies accounted for 89.4-99.7% of the total kinetic energy.

While there is presently considerable interest in using specially designed drifters to obtain reliable estimates of ocean currents, previously published measurements of surface or surface layer currents in the region of the Brazil Current based on satellite-tracked drifters are very few. Olson *et al.* (1988) used a small number of surface drifters in the Brazil-Malvinas Confluence, together with satellite imagery to study the temporal and spatial variations in that region. Because their study area emphasized the Brazil-Malvinas Confluence, their drifters were all launched poleward of 35° S. These authors, however, comment on the complex structure with its eddies, filaments and meanders. They note that the Brazil Current reverses its southerly direction between 40° and 60° S and cite Reid *et al.* (1977).

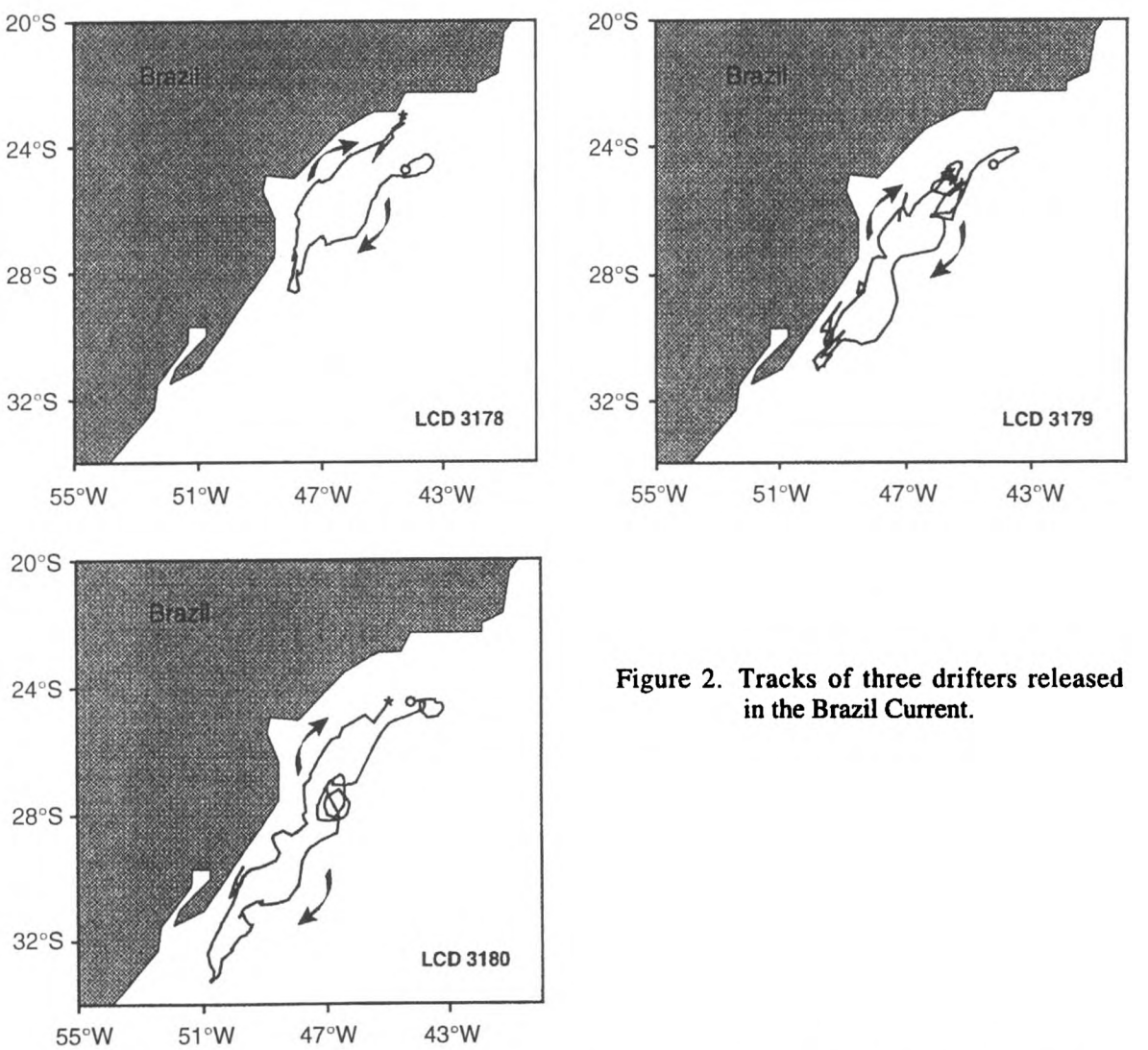

Figure 2. Tracks of three drifters released in the Brazil Current.

Piola *et al.* (1987) used the international FGGE drifting buoy data base to determine the surface velocity field and kinetic energy due to the mean and eddy velocity fields. Due to their use of a 4° grid in the Brazil Current region, the two

mean velocities determined for the region were 24 cm/s toward 237° (centred at 26° S, 46° W) and 18 cm/s toward 210° (centred at 30° S, 50° W). Our mean velocity estimates for the Brazil Current are in general agreement with those of Piola *et al.* (1987). The higher spatial resolution of our data, however, permit the northerly extension of the Malvinas Current to be observed.

Their estimates for the kinetic energy per unit mass for the mean and eddy velocity fields in the Brazil Current were 200 cm^2/s^2 and 500 cm^2/s^2 respectively and for the Brazil-Malvinas Confluence region were 200 cm^2/s^2 and 1,200 cm^2/s^2 respectively. Eddy kinetic energy accounted for about 71% of the total kinetic energy in the Brazil current and 86% for the Brazil-Malvinas Confluence.

Intercomparison of the kinetic energy determinations shows the present estimates of the mean flow to be slightly smaller than those of Piola *et al.* (1987), while the kinetic energy related to the eddy velocity field determined by the present study is at least double the values obtained from the FGGE data set for the same region. While eddy kinetic energy is dominant in both studies, its contribution is about 10–15% higher in the present study. In addition to the possibility of real interannual differences in the circulation, differing results might also be expected due to different drifter designs. The different spatial resolutions obtained by the present ARGOS system and the positioning system in use during the FGGE field work can also be expected to produce somewhat different results.

These preliminary results from our western boundary current experiment provide evidence that as the Brazil Current approaches the Brazil-Malvinas Confluence, some of the BC turns coastward at several locations and recirculates. This return flow becomes a part of the northeasterly coastal current between 33° S and 23° S.

Acknowledgements

This work was made possible by financial support from FAPESP (Contr. No. 91/0542–7) and CNPq (Contr. No. 403007/91–7). The Inter-Ministerial Commission for Sea Resources (CIRM) provided fuel for the R.V. *Professor W. Besnard*, for this and several other COROAS cruises. The author wishes to thank Prof. P. Niiler for his encouragement in initiating this field work. Travel support was provided by WOCE–IPO to participate in three of the WOCE–SVP planning meetings.

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(*Editor's note.* The Malvinas Current referred to in this WOCE Newsletter reprint is known as the Falkland Current in all UK Hydrographic Office publications.)

SCENE AT SEA

B. Kumar

m.v. *Pacific Onyx*. 12 July 1996 at 0025 UTC. Whilst *en route* from Brisbane to New Plymouth, Second Officer B. Kumar and members of the ship's company watched the waterspout shown in the photograph. It was about 1–1.5 n mile astern of the ship and formed from a cumulonimbus cloud with a base at 600 feet. The rotation time of the spout was 5 seconds and it rotated in a clockwise direction. The waterspout was clearly visible for 10 minutes until obscured by passing showers. The air temperature was 17.5°, wet bulb 17.0°, sea 23.0°.

(The *Pacific Onyx* is a Selected Ship reporting for the New Zealand VOF.)

UKOPMOD: forecasting currents in U.K. coastal waters

By J.R. Davies

(Ocean Applications Branch of the Research and Development Division of The Met. Office)

The Met. Office has recognized an increasing need for ocean forecasting products in UK coastal waters. For the Royal Navy and the oil/offshore industry, this need is particularly acute as operations must continue around the clock for 12 months of the year in the inhospitable waters of the North Sea and Irish Sea. New ocean forecast products could help these and other customers in the scheduling and planning of sensitive offshore operations to minimize risk and downtime.

To try to meet these requirements, The Met. Office is trialling an ocean shelf model called UKOPMOD (United Kingdom Operational Model). The UKOPMOD forecast system combines the accuracy and reliability of the Meteorological Office's numerical weather forecasting with the tidal modelling expertise of the Proudman Oceanographic Laboratory to give the best possible forecast of both weather driven and tidally driven ocean phenomena.

Operating over the UK continental shelf area, UKOPMOD will be capable of forecasting currents at any depth and current profiles at a 12-km resolution out to 36 hours ahead. As an example, Figure 1 shows a map of surface current directions (arrows) and current speeds (colour scale) for 2000 UTC on 21 February 1993 (the same winter that the *Braer* tanker was grounded off Shetland by severe wind and currents). The orange and red colours show current speeds in excess of 1 m/s, which can be hazardous to operations.

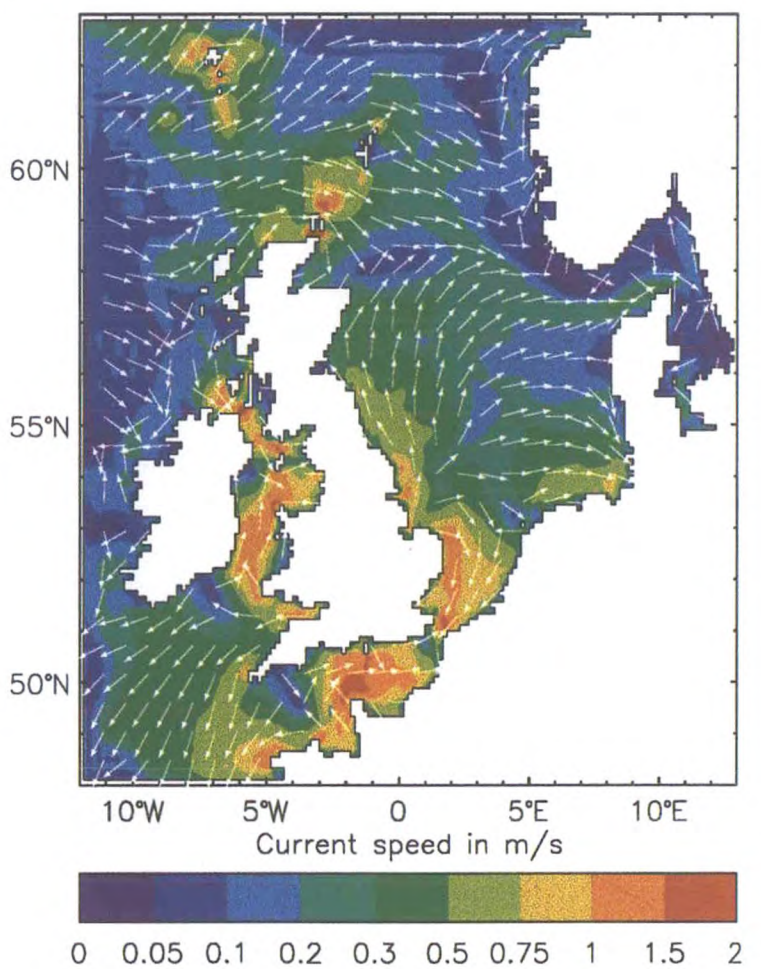

Figure 1. Forecast of total surface currents for 2000 UTC on 21 February 1993.

The operational trial of UKOPMOD will run until summer 1997 and, during this period, various tailored products will be distributed to selected customers for assessment. If the trial shows the products to be useful, The Met. Office anticipates adding UKOPMOD forecasts to its portfolio of weather and ocean products.

For more details about UKOPMOD, contact John Davies at The Met. Office, telephone +44 (0) 1344 856875, or e-mail jdavies@meto.gov.uk.

The following article was first published in this journal eleven years ago but since birds will always use ships as mobile islands for rest and recuperation, and as many readers may be unaware of how they can help birds on board ship, we reprint it in this issue trusting it will still be of interest.

Treatment of bird casualties at sea

BY CAPTAIN A.S. YOUNG

(Royal Naval Birdwatching Society)

We regularly receive reports of both land and seabirds landing on board ship. Some of these birds are simply using the ships as a convenience; for instance, boobies may use a ship as a staging post or as a platform from which to fish, even chasing flying-fish off the bow. One can frequently see Raptores such as hawks or owls, on the departure of grain ships, taking advantage of the usual numbers of seed-eating animals and small birds, gleaning the spillage. Sometimes egrets and herons alight merely to take a rest or hitch an easy passage on board. Such happenings are usually of considerable interest to the birdwatcher and photographer.

However, numbers of birds may not be so fortunate as to be on board as a matter of choice; some, like the inquisitive tropic-birds, come foul of stays or aerials and although uninjured may not be able to get themselves airborne again without assistance. Others may be storm wrecks seeking their last chance of survival, such as petrels, storm petrels, shearwaters and terns or similar small seabirds. Even land birds may be driven far off their migratory course by stress of weather.

It is very sad to see some pathetically bedraggled storm petrel, recently rescued from the scuppers, exhausted, dazed and probably very frightened, being presented to the Steward or bridge watch for succour. I understand the dilemma of the recipient of this fragile bundle of wet feathers. How best to assist this wee fellow seafarer in need?

Here I shall endeavour to set down a few points which I trust will help both the benefactor and the casualty. The birds under these conditions must inevitably be in a state of shock and should therefore be handled as little as possible. Quiet and warmth are the first factors to consider. A cardboard box or carton of suitable size giving reasonable room for movement is ideal with an old towel or cloth in the bottom for comfort, into which the casualty is gently placed. The box should be covered, such as with a piece of dark bunting, to keep the occupant in a quiet and darkened environment, but allowing good ventilation. The box should be placed in a warm, not stifling hot area, and away from disturbance for the patient to rest, dry out and, hopefully, recover.

It is not advisable to give food immediately, but *fresh* water in a suitable container, which cannot be spilled or bathed in, should be provided. A little sugar or honey mixed into this would be acceptable and probably help recovery.

The patient should be disturbed as little as possible for the first few hours.

This treatment may be all that is required: under no circumstances 'kill with kindness'. If the bird appears to be 'scattin' about', trying to use its wings, looks lively in response to intrusion or attempts to preen (straighten its feathers to replace the necessary oils), it is a good sign that all is well and if conditions are favourable weather-wise, release should be considered, as they are much better off in their natural environment. The latter applies more strictly to seabirds than to the land varieties.

If it is felt necessary to keep the bird for a longer period, due to continuing storm conditions, or distance from land in the case of land birds, feeding must be considered and this will depend on the type of bird in question.

Seabirds of course prefer 'fishy' food, and so I shall deal with this aspect next. The size of the bird really dictates how the food should be presented, and this may call for a little ingenuity, a quality which the average seafarer is well endowed with. It is rather pointless offering a whole kipper or half a cod on a saloon plate (one might as well go the whole hog and provide knife, fork and knapkin as well, for all it will mean to the bird); I think it is correct to say that birds have little or no sense of smell, and they will not realize that the object placed before them is life-giving food.

The first item that comes readily to mind is the sardine — in oil rather than tomato sauce please — which can be mashed and thinned down for small storm petrels or separated out to look like fish for terns and shearwaters. Morsels of fresh fish, squid or non-fatty meat cut into small pieces could also be offered. Even then, seabirds may not recognize the food as such and it may be necessary to resort to forced feeding at first, using gentle but firm persuasion.

An eye-dropper has been used to great effect with small birds. A raid on the medical locker may produce a form of instrument that can be adapted, given the permission of the M.O. of course. For larger birds, small pieces of food may be introduced into the gullet with the fingers, or other surgical implement, until the recipient gets the message, but do not try to overdo it. The provision of fresh water is most important.

Land birds are another matter although initial treatment is much the same as for seabirds, viz., rest, warmth and a little water. Many land birds are specialized feeders and do not take easily to an alien diet, though anything is worth trying to find something to suit the palate. Size of bird and type of bill may give a guide to feeding habits: the hooked bill of the raptor for tearing flesh, long thin bill for prodding mud for worms; a long and thick bill for prising out grubs and dealing with larger insects, stubby and heavy indicating a seed-eater or short and thin for small insect-eaters, to name but a few.

Seed in the form of rice, oatmeal or other pulses, cooked or uncooked, bread and biscuit crumbs, non-fat meat, chopped or minced, cheese and hard-boiled eggs, both finely minced, as well as fruit, both fresh or dried, are some of the foods that may be tried. If all else fails, a syrupy solution administered by dropper may help replace lost energy and save the day. Some of the Field Guides go into the subject in rather more depth.

Oiled, and especially injured, birds are naturally much more difficult to attend to without specialized knowledge: I would venture that, dependent upon the

degree of oiling or injury and the ability of those concerned, it may be more humane to quickly terminate the suffering; always a sad occasion, but often for the best. Light oiling can be treated fairly easily after the patient has been allowed to rest, during which time it should be prevented from trying to preen or clean itself and thus swallow the wretched stuff. A sock or stocking with the toe cut off and pulled over the bird's head to cover the body is ideal. The affected parts should be gently washed with a weak solution of washing-up liquid in luke-warm water and repeated as necessary until clean. The bird should then be left to rest, dry out and start preening again to straighten and restore the natural oils to the feathers. Never release a bird before it has preened for if it alights on the water, it will sink due to this lack of waterproofing oil on its feathers.

Whilst far from comprehensive, I hope the above will be of value to those who become involved with these unfortunate 'fellow mortals' as Robbie Burns would put it. It is appropriate to correct one rather common misconception with regard to some seabirds found on board. I am sometimes advised that the subjects would only 'shuffle about' as though exhausted or injured, although neither is usually the case. The more pelagic (spending most of their lives away from land) seabirds only come ashore briefly to breed, hence their legs have virtually no exercise at walking and therefore lack the strength to support their body weight and they appear awkward and distressed. Usually they need only a helping hand to become airborne and return to their natural environment.

Here's hoping the necessity seldom arises, but if it does, good luck and success to all who have the opportunity to minister to our feathered friends.

SPECIAL LONG-SERVICE AWARDS

Service in the cause of voluntary weather observing up to the end of 1995 has been assessed and the Chief Executive of The Met. Office is pleased to announce the names of the four shipmasters who have each been selected to receive a long-service award. They are:

CAPTAIN T.C. BLACK, Blue Star Ship Management Ltd
CAPTAIN A.J. LESLIE, formerly with P&O Nedlloyd Ltd
CAPTAIN D.R. LLEWELLYN, OOCL Ltd
CAPTAIN C.C. WOODWARD, P&O Nedlloyd Ltd

The awards, in the form of inscribed presentation barographs, are made on the basis of the number of years during which meteorological logbooks have been received from ships of the UK VOF, given the minimum requirement of 18 years including the year in question.

Arrangements will now be made in order to arrive at a mutually agreeable date upon which all four recipients can attend the presentation.

AURORA NOTES JANUARY TO MARCH 1996

By R.J. Livesey

(Director of the Aurora Section of the British Astronomical Association)

In 1996 the aurora has been very quiet in British waters. There were two periods of activity in the spring and autumn while the summer, from May to August, provided no sightings and was also magnetically very quiet. Sunspot cycle number 22 had reached its minimum.

The downturn in marine observations was quite marked. At the sunspot minimum in 1976, some 72 reports were received of the aurora from observers on board ship. At the sunspot minimum in 1986 there were 55 reports. In 1996 only eight reports have been submitted [covering the period from January to September]. The question arises as to whether or not there has been a real reduction in the aurora or whether the lack of observations is due to fewer ships being available at the right place and time or, owing to ship management procedures such as leaving deck lighting switched on, the detection of faint aurora is precluded.

The observation of auroral activity and the frequency of its detection are dependent upon the location of the observer. Ships sailing within sight of the polar auroral oval would be expected to see aurorae quite often, no matter the state of the sunspot cycle. This has been confirmed in 1996 with observations made by land observers at Fairbanks, Alaska and at Reykjavik in Iceland. These observers have regularly reported the presence of multiple active bands typical of auroral oval apparitions. During the declining years of the sunspot cycle, many repetitive quiet aurorae are to be found in the higher mid-latitudes such as northern Scotland, Orkney and Shetland.

Because of the configuration of the Earth's magnetic field, mid-latitude aurorae extend much further to the south in North America than they do in British waters. Aurorae are therefore seen more frequently in the middle of North America, along the region of the Canadian/United States border, than at the higher geographic latitudes of northern Scotland. This has been confirmed in recent years by an aurora observing site in North Dakota operated by a dedicated amateur astronomer. Such observations can be used as an index of mid-latitude auroral activity.

Figure 1 shows the annual frequencies with which the aurora was estimated to have been visible in the years 1976 to 1996 at three typical ports in British waters. Entries are given for all aurorae be they glows on the horizon or a fully-grown auroral storm. The distribution is also given for quiet aurorae consisting of glows or arcs without movement, pulsations, rays or other features. In sunspot cycle 22 will be noted the number of quiet aurorae visible from northern Scotland but not detected further to the south. The aurorae seen at the latitude of Liverpool have been correlated with the more active solar transient events that produce magnetic storms.

Also in Figure 1 have been plotted the frequencies with which larger mid-latitude auroral activity leading to overhead activity in Scotland have been recorded. For comparison, the annual frequencies of all aurorae, and major aurorae observed by Jay Brausch at his observing site in North Dakota, have been included to show the difference between the visibility of the aurora on both sides of the Atlantic. Glen Ullin has a good record for cloudless conditions suitable for auroral

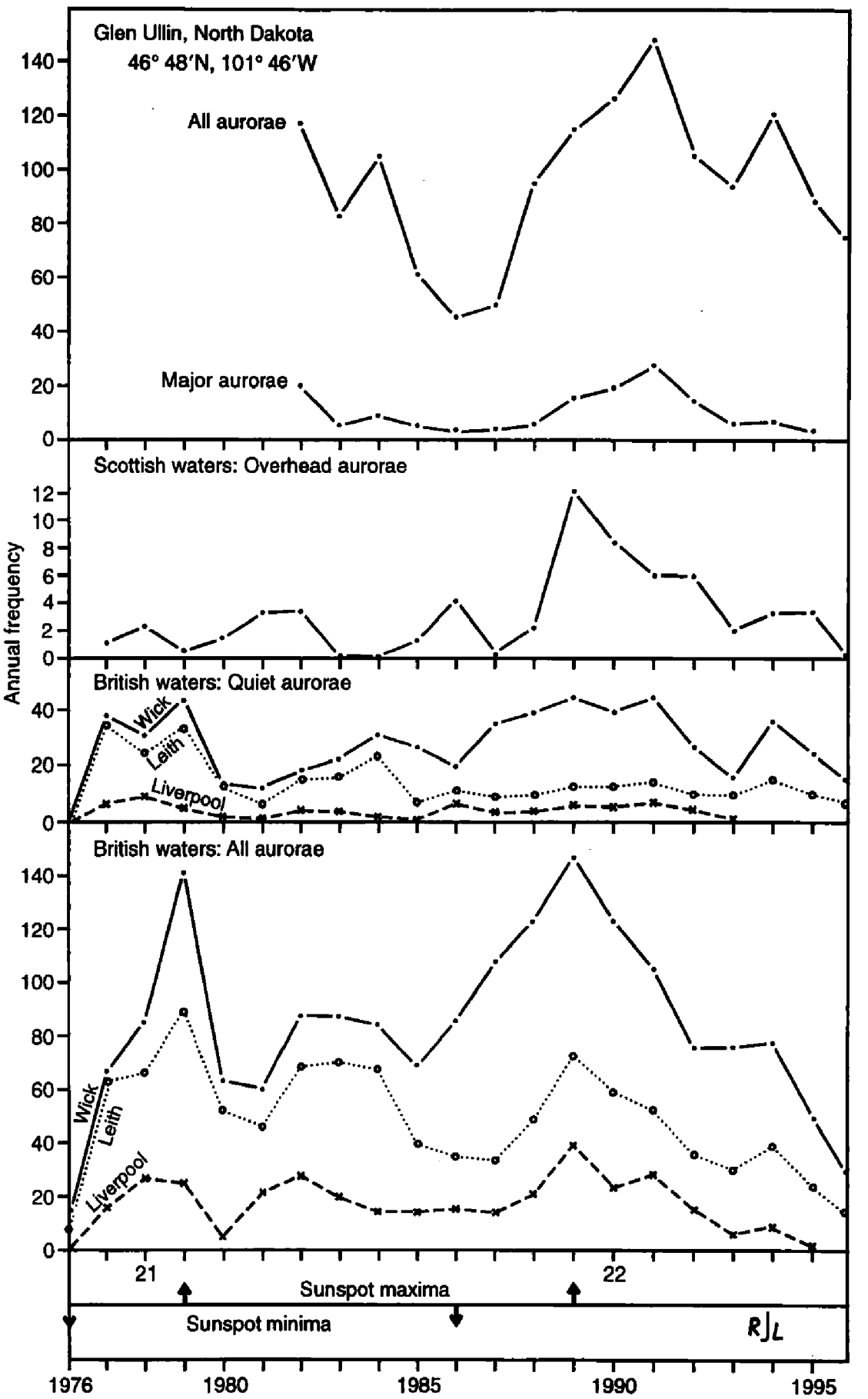

Figure 1. Estimates of annual frequencies of visible aurorae 1976–1996.

observing. It is interesting to note that the peak of auroral activity in North Dakota appears, in cycle 22, to have taken place in 1991 whereas in British waters this appeared to take place in 1989, the year of sunspot maximum. However, the quiet more northerly aurorae in British waters do show a tendency to peak in 1991, although it is not very marked.

Not too much should be read into these statistics because of the probable errors set up by the effects of cloud, unavailability of observers in the right places, and other factors affecting the detection of auroral activity. Nevertheless, they form a good record of what has been seen by many observers, on land and sea over recent years.

Letters to the Editor

Abnormal current — eastern Atlantic Ocean

I was recently in command of a ship on voyage from Tenerife to Namibia (a Dutch vessel, the *Aaltjie Margriet*).

Off Sierra Leone (10° 40′N, 19° 00′ W) we began to experience adverse current setting north-west at 0.5 knots, and we continued on our south-easterly voyage until reaching 11° 40′ S, 03° 00′ E. The dates were from 17 July to 25 July 1996. No Equatorial Counter-current or Guinea Current was experienced.

The current was plotted at 4-hour intervals; our compass error was known and, having time in hand, we measured our speed through the water using a Dan-buoy with radar reflector soon after plotting commenced, to ensure accuracy.

Some examples of our plot are shown hereunder (some positions have been rounded off for convenience).

Position	Current Set (°) and drift (knots)	
10° 40′ N, 20° 00′ W	315	0.5
08° 00′ N, 18° 00′ W	300	1.0
04° 40′ N, 14° 20′ W	290	1.2
02° 00′ N, 12° 00′ W	270	2.0
00° 40′ S, 10° 30′ W	250	2.0
02° 00′ S, 07° 40′ W	267	2.1
04° 10′ S, 06° 14′ W	256	2.0
06° 40′ S, 03° 19′ W	240	1.0
08° 20′ S, 01° 15′ W	245	0.7
10° 25′ S, 01° 21′ E	250	0.5
11° 40′ S, 02° 55′ E	210	1.1

These results show a westerly set over a spread of latitude of over 22 degrees, which is surely unusual especially north of two or three degrees north. Also, the direction of the set experienced south of the Equator is unusual.

Have any other correspondents reported any similar anomalies of current experienced during this period?

Captain K. Lark, Master of the *Aaltjie Margriet*.

Extreme waves and 'trapped fetch'

In your July 1996 issue [*The Marine Observer*] you published an article about the experience of the *Queen Elizabeth 2* during her encounter with hurricane Luis. I had the pleasure of discussing this event in detail with Captain Warwick. His description of the big wave as "the white cliffs of Dover coming towards me" sticks in my mind. And Grant Laversuch, Cunard's Operations Manager in New York, kindly sent me a copy of extracts from the ship's log. The information they provided became the highlight of a poster session and several seminars I gave, and later an important part of my published paper [Bigio, 1996] on the waves generated by this storm. There were several unique aspects of this storm that made it very interesting to study.

I would like to take this opportunity to point out to you and your readers the importance of reports like Captain Warwick's. My office, the Canadian Forces Meteorological and Oceanographic Centre (METOC), in Halifax, Nova Scotia, produces weather and sea state analyses covering much of the North Atlantic, and forecasts for the north-west Atlantic. We transmit most of these on our Radiofacsimile Broadcast (CFH). Reports from experienced mariners — especially during storms or other extreme events — can have a large impact on how well we deal with a storm. Analysts depend on such reports and value them highly. While few of these reports will lead to a research effort (as Captain Warwick's did), all contribute to an analyst's understanding of weather conditions at sea. And without a good analysis there cannot be a good forecast. Remote sensing technology cannot supply the detail available from an experienced mariner.

But I must take issue with your use of the term 'rogue wave'. This term is not well defined. It is used colloquially to refer to a large wave for which there is no reasonable explanation.

In this case it was acceptable to use this term around the time of the event because it was an extreme event and was well beyond the experience of the people who encountered it and the journalists who reported it. But soon afterward it became clear that this wave was generated by hurricane Luis and grew to 30 metres because of a phenomenon called 'trapped fetch'. This occurs when a storm moves along with the waves it generates and continues to add energy to them. It is no longer appropriate to describe it as a 'rogue' wave.

Ralph Bigio, Scientific Services Meteorologist, Meteorology and Oceanography Centre, Halifax, Nova Scotia.

The 'Old Man' and the moon

27 September 1996. On passage from Europoort to Sidi Kerir. When I went off watch at midnight ship's time (2200 UTC), I asked the 2nd Marine Officer to give me a call as the eclipse of the moon started. My phone duly rang just before 0125 and I was informed that the eclipse was in progress. I made a mug of tea and proceeded to the bridge wing to see how the eclipse was progressing. It was a beautifully starlit evening with very few clouds, light breeze with slightly damp air. I sat on the park bench outside the wheelhouse to observe the shading of the moon which was almost as if a blind was being slowly drawn across the moon's face. As it started, the moon appeared to be ever so bright but as the shading slowly progressed, I suddenly started to feel chilly — just like when a cloud passes over the sun — and repaired below to put on my fleece-lined jacket and woollies.

At 0219 the whole face of the moon was eclipsed though it was clearly visible as if I was looking at it through one of the old-fashioned light-brown shades people used to have at their kitchen windows.

From the reactions of those who came on or went off watch I am quite sure they thought the 'Old Man' had gone completely crazy to get up in the middle of the night to watch the moon eclipsed but I found it quite exhilarating.

Just prior to the total eclipse, there were all sorts of shooting stars visible as if there was a fireworks display to celebrate the event, which added a little more to the spectacle. It is more years than I care to remember since I last saw a total eclipse so I was really pleased that I had taken the trouble to get up and observe it.

At about 0330 the moon started to appear on the other side of the eclipse until, by about 0435, it was visible in all its silver-and-white glory.

It was really good to be able to watch the whole eclipse with so very little cloud, and all the stars seemed to be that little bit brighter for some reason, as if they had put on their best display not to be outdone by the moon and her eclipse.

The observers of the eclipse in its numerous stages were myself, 2nd Marine Officer S.C. Banton, SG1 H.L. Breedy, SG1 R.G. Bradshaw as well as two of the Malaysian Deck Cadets.

Captain A.F. DeVanney, Master of the *Leonia* (Shell International Trading and Shipping Company Ltd).

Meteors or meteorites?

Over the last three nights [on passage between Mina al Fahl and Ulsan] the skies have been clear with a full moon and medium, low and high clouds, the cloud covering about half the sky. I have observed on these nights, between 1300 UTC and 1400 UTC, a series of meteors falling that I find quite interesting. When the first one appeared, the night [30 June/1 July] was clear with a partial coverage of low cloud. The meteor fell about 3 n mile off our starboard bow; I knew it was close because I could see small 'sparks' coming from the tail. At first glance I thought it to be a pyrotechnic from an LSA. However, it was not as bright as a parachute flare. It reached to about 30 m from the sea surface before it was extinguished, and a high-pitched whistle accompanied it as it fell. I knew it was going to be low because when I first saw it, the clouds were in the background.

The second one fell about 7 n mile away on the next night, 1/2 July, when there were Cu, Cb and As clouds in the sky. The meteor, like the one on the night before, had a trail with sparks burning off it, and also reached the surface so it should be called a meteorite, like the previous one. The phenomenon lasted all of 5 seconds.

Finally, last night 2/3 July, another landed about 10 n mile away burning like a pyrotechnic flare from a lifeboat but again not with the intensity of a flare. The cloud coverage was 5 oktas of high and low clouds.

On all occurrences individual 'sparks' have been seen burning away from the meteors and high-pitched whistles heard each time. Each occurrence lasted the best part of 5–7 seconds. The ship was following a course of 039° between Kepulauan Anambas and the Macclesfield Bank in the South China Sea and was in position 14° 06′ N, 114° 00′ E at 1800 on the 2nd.

Mr C. Ryan, 4th Officer on the *Hawk* (Mobil Shipping Co. Ltd).

Book Reviews

The Ship Handler's Guide by Captain R.W. Rowe. 210 mm × 300 mm, 172 pp., *illus.* Published by The Nautical Institute, 202 Lambeth Road, London SE1 7LQ. E-mail nautical.institute@dial.pipex.com. Web site: http://www.nautinst.org. Price: Members £25.00. Non-members £35.71.

This book is intended to provide a common understanding of the fundamentals of ship handling to owners, masters, officers, pilots, harbour masters and tug masters. The author brings to bear a wealth of experience as practising Master, Trinity House Pilot and ship handling trainer on the ship simulator at the Maritime Centre at Warsash, Southampton, in conjunction with which the book was produced. Captain Rowe has also accompanied pilots from around the world on their trips, gaining much knowledge from a diverse range of pilotage districts.

There are twelve chapters preceded by a preface and two forewords, and succeeded by a comprehensive index. All possible aspects of shiphandling are covered in detail, from traditional methods and basic descriptions of the pivot point and turning levels, to special propellers and rudders, and use of all kinds of tugs. In between, there are chapters on speed control, transverse thrust, turning, the effects of wind, channel contours, trim, squat, interaction and tide: use of anchors, model ships, bow thrusters and twin screws are also included.

The information and descriptions are very clear and unambiguous, and the large, uncluttered diagrams, of which there are many to enhance the text, add much to the effectiveness of the publication.

No doubt with the desire for uniformity with other Nautical Institute publications, and standardization of the bookshelving on ships' bridges, the format is unnecessarily oversized, brought about by the wastage of almost one-third of page space due to the text being inset by that amount: the diagrams are also larger than necessary, although very clear as a result. This oversizing may make the book appear highly priced for the amount of information it contains, but this information is unlikely to be found under one title anywhere else in the seafaring catalogue.

Captain J.F.T. Houghton

Commercial Management for Shipmasters by Robert L. Tallack, Bsc, FNI. 215 × 305 mm, *illus.*, 288 pp. Published by The Nautical Institute, 202 Lambeth Road, London SE1 7LQ. E-mail nautical.institute@dial.pipex.com. Web site: http://www.nautinst.org. Price: Members £42.00. Non-members £60.00.

This is a well produced book and could be most useful to all ship officers, and certainly to all age groups. It is well laid out and well thought through, being both instructive and enlightening to read. It appears to be aimed at those who have already studied for Masters, and perhaps have that qualification; in this area, there can be no doubt that the ideas about working practices, business behaviour and safety practices would be most beneficial.

The aim of the book, clearly stated, is to improve commercial performance and the **Shipmaster**'s understanding of modern management practices. Good. It infers the book is not a reference book but a practical guide, although I feel it may well be used as a reference work. The practical aspects make it ideal for reference or study as well as a practical guide; it is useful for study if only for the various check lists, charter parties and other forms on show. The Acknowledgements and

References section talks about the need to teach young seafarers; hopefully, they will be assisted in their studies by someone with experience, as the book has some omissions of note, and junior officers using it would perhaps be unaware of them. The omissions as far as I am concerned are in the sections on Management, where bullying (which used to happen) is not covered, and in Marine Insurance. Although General Average is moderately covered, Particular Average is not mentioned in the Marine Insurance section, in Chapter 7, yet in Chapter 11 suddenly it is being claimed, and indeed itemized against expenses for an occurrence at sea. No doubt the Master of 'experience' would have no problems coping with the sudden introduction of this average but it would be most useful to have it fully explained in the relevant section for those who may acquire the book for reference or study.

Throughout the book in general, I liked the highlighting used to reinforce a statement, creating terrific impact; the plans, graphs and diagrams also have good impact and much work has gone into the diagrams which are both informative and advisory; finally, the clear prose aimed at the mariner is arranged in two columns to a page making it easy to mark relevant places.

My dislikes were that there are no numbers for relevant pages in the Index (a search through each chapter is needed to find the item); there are no page headers to show at what part the book is open, and the small margins do not leave enough room for making notes.

Overall, *Commercial Management for Shipmasters* is very good indeed and will be a much-valued addition to any ship's bridge library.

Captain Austin Maytham
UK Port Met. Officer, Bristol Channel

Personalities

RETIREMENT — CAPTAIN G. DODSWORTH retired in November 1996 after a sea-going career covering 40 years.

George Dodsworth was born in Stretford, Lancashire on 19 November 1935 and began his nautical career in 1951 when he joined the Royal Navy for a brief period, as Captain Dodsworth puts it, "I went away as Deck Boy. I rose to the dizzy heights of AB".

His observing career began in 1954 when he became an apprentice in Manchester Liners Ltd for two years, although he doubts that his name appeared in the met. logbooks of that time. During his apprenticeship he sailed on *Manchester Shipper*, *Manchester Regiment*, *Manchester Port*, *Manchester Trader* and *Manchester Spinner*. Studying at Liverpool Nautical College for Second Mate in 1957, First Mate in 1960 and Master in 1964, he took employment with several companies during the next few years, including Ellerman Papayanni, Transatlantic Rederi, Lamport & Holt, Egon Oldendorff and Olympus Shipping, finally returning to Manchester Liners Ltd in 1971.

The Met. Office received Captain Dodsworth's first logbook in 1974, from *Manchester Challenge*, and this was followed by contributions from the *Manchester Quest*, *Crusade*, *Vigour*, *Renown*, *Concept*, and *Reward*. He remained

with that company until its demise in 1981, having been appointed Master in 1978, his final 'Liners' vessel being the *Manchester Zeal.*

In 1982 he joined Pacific Nuclear Transport Ltd and contributed to a further 22 logbooks, mainly from the *Pacific Crane* and *Pacific Sandpiper* until his retirement. Captain Dodsworth recalls an occasion in the North Pacific Ocean in the early 90s when a quiet and peaceful evening was suddenly disturbed by the ship going over to about 15° and then settling down again. The cause was surmised to have been a tsunami.

Trusting that nothing will disturb his retirement, our thanks go to Captain Dodsworth for all his observing work and we wish him health and good fortune with many opportunities to follow his interests which include model-making and tracing the family history.

RETIREMENT — CAPTAIN T.C. RAMSEY retired in September 1996 following a sea-going career of almost 40 years, having spent all but two of them with the same company.

Captain Ramsey was born in Newry, Northern Ireland, in 1939 and went to sea in January 1957, as Deck Boy in a little coaster owned by the British & Irish Steam Packet Co., of Dublin. He joined Esso Petroleum Co. Ltd as an Ordinary Seaman in 1959 and remained in their continuous employment until retirement last year. Captain Ramsey's first met. logbook was received in 1962, coming from the *Esso Hampshire* and being followed by logs from *Esso Exeter* and *Esso Westminster*, which took his observing career to 1967 and a break from VOF work but he then studied at Liverpool Polytechnic prior to sitting for his certificates, gaining his Master's Certificate in 1969.

His first command was *Esso Pembrokeshire* to which he was appointed Master in 1974, and his only logbook from that ship was received in October 1975. He spent the last 20 years of his career as Master in the North Sea crude oil trade, apart from an 18-month spell ashore in Esso's offices at Fawley, as Fleet Operations Inspector. Captain Ramsey says, "I am led to believe that I was the longest-serving Captain in North Sea shuttle tankers", indeed his observing record shows a certain 'attachment' to his commands, as there are seven logbooks bearing his name from the *Esso Warwickshire* and no less than 27 from the *Esso Aberdeen* (renamed *Petro Aberdeen* in 1994) this being his final command and the source of the four Excellent Awards for which he was nominated between 1977 and 1995.

Captain Ramsey continues, "In those 20 years I experienced enough extremes of weather to last anyone a lifetime! However, it was always pleasing to have our weather reporting efforts so well appreciated by The Met. Office.

"I am now very well settled into retirement, playing golf at Wallasey three times a week and helping with the workload of our first grandchild. I also sail, so the weather will continue to be of great interest to me. My grateful thanks for the kind words of encouragement and much-appreciated awards I received over the years."

Notices to Marine Observers

UNCLAIMED EXCELLENT AWARDS FOR 1995

The assessment of meteorological logbooks received in 1996 is now complete, and the nominations for Excellent Awards for the year will shortly be drawn up.

While we look forward to making arrangements for these awards, sadly we have yet to hear from a number of nominees who were selected for the 1995 round of awards, and whose books await them. Their names appeared in the October 1996 edition of this journal and are listed below once more.

Captain:

R.M. Herring, J. Smith.

Principal Observing Officers and Radio Officers:

A.A. Adolfo, R. Aurora, B.G. Ball, J. Bose, D.I. Bell, J.K. Bhadra, V. Cajayon, L.A. Cal, G. Clarkson, D. Coelho, C.Y. Constantinou, P. Dasgupta, M.D. D'Silva, A. Derla, K.A. Desai, A.C. Dudley, L.C. Durante, V.S. Fernandez, H.C. Gomes, S. Gupta, A.H. Hamdy, R.G. Hanlon, M. Horridge, Z.U. Islam, M. Jarecki, V.A. Javier, M. Jones, M.W. Jubb, A. Khela, P. Lagrada, R.B. Lapinio, R. Millar, R.P.C. Mitcheson, L. Moakes, J.D. Moore, J.T. Mores, J.E. Parnaby, S. Pendon, L.C. Potestades, H. Quddus, S.J. Reed, H. Reese, M.A. Saifie, A. Suarez, J.S. Tamayo, E.D. Tan, C. Tolentino, R. Tomasz, D.A. Trivedi, A.Y. Villarubia, M. Williamson, D. Woollan, D.R. Young.

Any Masters, Principal Observing Officers or Radio Officers named above are invited to contact the Observations Voluntary (Marine) branch of The Met. Office, at Bracknell (either directly or through any UK Port Met. Officer) with details of their Discharge Book Number and a forwarding address to which the award may be sent.

NEW YEAR'S HONOURS

Captain David Rattray has been rewarded for more than 30 years of service with the Scottish Office Agriculture & Fisheries Department, with an O.B.E. in the 1997 New Year's Honours.

Captain Rattray joined the company as a Second Officer in 1963 and was promoted to command 10 years later. He is now Senior Commanding Officer in the fleet, and Master of the 1,385 grt f.p.v. *Norna*. He first went to sea in 1953, as a Cadet with Anchor Line, and also spent five years with Ellerman's before embarking on his long career with the Fisheries Protection Agency.

FLEET LISTS

Fleet Lists

UNITED KINGDOM
As for 1 March 1997

1. The names of Masters, Observing Officers and Radio Officers (where carried) *are as given in the latest meteorological logbooks received. up to the date shown above.* The date of the latest logbook received is given in the second column. Masters and Officers are invited to notify the Editor of any errors or omissions found in the lists.

* Indicates a recently recruited ship from which a logbook has not yet been received.

† Indicates a ship from which no logbook has been received during the last 12 months, and therefore for which it is impractical to show the names of Masters and Officers.

2. All logbooks received will be acknowledged by the Marine Superintendent.

3. Port Met. Officers will personally call on Masters and Observing Officers as opportunity offers, and on requests from ships.

Masters and operators of ships are particularly requested to advise the Marine Superintendent or a Port Met. Officer with prior notice of any changes of service or ownership which may necessitate the withdrawal from the ship of equipment on loan from The Met. Office.

Selected and Supplementary Ships

Name of Vessel	Last Return Received	Master	Observing Officers	Radio Officer (Where Carried)	Owner/Manager
Abbey	4.2.97	R. Gibbons	J. Mealor, N. Binns, F. Murphy	—	Furness Withy (Shipping) Ltd
Aberdeen	*	—	—	—	Northern Marine Management Ltd
African Ruby	†	—	—	—	MOL Tankship Management Ltd
Al Awdah	16.9.96	S. Gyi	O. Bari-Syed, M. Sobhy-Younes	—	Kuwait Oil Tanker Co.
Al Funtas	1.10.96	Z.A. Rizwani	A.A. Mohammad, A.H. Almannaie, Z.A. Ahmad	A.S.J. Valencia	Kuwait Oil Tanker Co.
Al Rayyan	†	—	—	—	Kuwait Oil Tanker Co.
Al Samidoon	†	—	—	—	Kuwait Oil Tanker Co.
Al Shuhadaa	1.10.96	D. Carrick	A. Zenneddin, W. Hamadak, S. Haider	—	Kuwait Oil Tanker Co.
Al Wajba	*	—	—	—	United Arab Shipping Co. (S.A.G.)
Alam Selaras	†	—	—	—	Pacific Carriers Ptc. Ltd
Alexis	†	—	—	—	Thorstone Ship Management Ltd
Alkman	27.11.96	—	M. Mesbahuddin, R.E. Forson	—	Wallem Ship Management (HK) Ltd
Alliance	19.12.96	L. Holtschmidt	S. Hamer, K.P. McNeill, D. Wood	G. Jones	Denholm Ship Management (UK) Ltd.
Alpha Centauri	28.10.96	E.P. Raphael	J.B. Khan, A. Pachori, A.A. Khan	—	Wallem Ship Management (HK) Ltd
Ambon	†	—	—	—	Wallem Ship Management (HK) Ltd
Amethyst	13.2.97	W.V. Venning	D.M. Shaw, P.M. Foster, B. Standerline	—	Stephenson Clarke Shipping Ltd
Anja C	3.1.97	J.W. Jackson	Rustandi-Dedi	—	Carisbrooke Shipping plc
Anne Boye	*	—	—	—	Hermann C. Boye & Co.

Appleby	29.1.97	R. Wade	B. Laing, T. Davies, C. Edwards	—	Ropner Shipping Services Ltd
Arctic Goose	20.12.96	W.G. Lockie	D. Barbaca	P. Price	Holy House Shipping AB
Arctic Ranger	13.1.97	A.W. Walker	M. Allison	M. Allison	Boyd Line Management Services Ltd
Arctic Swan	30.12.96	A. MacPherson	S. Bushe, B. Host	V. Ermakov	Holy House Shipping AB
Arctic Universal	7.5.96	A. Venner	J.L. Panghulan, E. Rabe, T.P. Relayosa	R.M. Sayajon	London Ship Managers Ltd
Argentina Star	16.1.97	P. Holtby	E. White, V. Bequila, B. Garing	—	Blue Star Ship Management Ltd
Arktis Vision	13.8.96	F. Mortensen	G. Andot, W. Costillas, V. Dongue	—	Hogg Robinson Shipping Services
Arunbank	20.2.97	E.F. Stewart	P.W. Hammond, A. Plisenko, V. Stepanov	V. Morgunenko	Andrew Weir Shipping Ltd
Assurity	*	—	—	—	F.T. Everard & Sons Ltd
Astrid	30.12.96	C.M. Toner	P. Compton, D.T. Stinson	—	The *Astrid* Trust
Atlantic Bridge	†	—	—	—	Tecto N.V.
Atlantic Liberty	*	—	—	—	MOL Tankship Management Ltd
Atlantic Universal	5.7.96	R.J. Kendall	F. Bartolome, J.R. Pesudas, M.N. Gurusinghe	S.R. Jayawickrama	London Ship Managers Ltd
Aukland Star	21.1.97	L.M. Colam	E.E. Cuasay, R.R. Chozas, J.J. Bayoneta	—	Blue Star Ship Management Ltd
Auk Arrow	†	—	—	—	Gearbulk (UK) Ltd
Author	17.2.97	G. Hatcher	M. Linders, S. Almond, R. Mallo	—	T.&J. Harrison Ltd
Aya II	2.1.97	C. Alexsander	E. Sanchez, J.R. Medina, V.G. Cruz	V. Paredes	Transportacion Maritima Mexicana
BT Nautilus	†	—	—	—	BT Shipping (London) Ltd
BT Navarin	20.12.96	G.N. Sutherland	G. Shharatkumar, G.A. D'Cunha. H.S. Cheema	M.K. Hassan	BT Shipping (London) Ltd
BT Navigator	21.1.97	G.N. Sutherland	V. Bhandari, J.B. Pinto, S.S. Samyal	M.T. Velayudhan	BT Shipping (London) Ltd
BT Neptune	†	—	—	—	BT Shipping (London) Ltd
BT Nestor	18.2.97	C.J. Bland	C.R. Bagshaw, V. Prasad, U.K.L. Bajaj	S.S. Trevedi	BT Shipping (London) Ltd
BT Nimrod	24.10.96	D.O. Morris	A. Bhakwat, G.P.S. Diwan, M. Mithias	—	BT Shipping (London)Ltd
BT Stream	12.9.96	A.K. Mehrotra	I.V. Sahovso, V.S. Zanotria, A.C. Guisadio	G.A. Gito	BT Shipping (London) Ltd
Baltic Breeze	4.12.96	B. Majunder	Win Naing Oo, Syed Moninul Huq, Khoo Gek Hung	Min Thura	Wallenius Line (Japan) Ltd
Baltic Eagle	†	—	—	—	Andrew Weir Shipping Ltd
Baltic Eider	†	—	—	—	Andrew Weir Shipping Ltd
Baltic Tern	20.12.96	K.F. Steven	S.J. Palmer	—	Andrew Weir Shipping Ltd
Baltic Universal	31.10.96	S. Venner	P. Katipunan, I. Senarillos, A. Adolfo	—	London Ship Managers Ltd
Belo Oriente	2.12.96	R. Lakhotia	V.E. Inuthaya Raj, Manjo Cairola, R. D'Silva	J.J. D'Mello	Eurasia Ship Mgmt Co. (HK) Ltd
Berlin Express	12.2.97	A.J. Fee	C.P. Coomber, B.D. Tucker, M.P. Martin	S.R. Cloutte	P&O Nedlloyd Ltd
Bison	†	—	—	—	Pandoro Ltd
Blue Flame I	9.12.96	F.J. Powdrill	J. Smith, I. Weatherill	—	Boston-Putford Offshore Safety Ltd
Bora Universal	4.6.96	B.M. King	R.N. Elikewela, Z. Wilczynski, A. Oginski	J. Cardownie	London Ship Managers Ltd
Botany Bay	6.12.96	S.G. Millar	B.D. Tucker, S. Frediani, C.K. Urwin	J. Bridges	P&O Nedlloyd Ltd
Bransfield	23.5.95	J. Cole	G.P. Chapman, J.R. Harper, K.C. Penny	S.J. Mee	British Antarctic Survey
Brisbane Star	18.2.97	J.H. Mockett	S.R. Pridmore, D.S. Sumaylo, R.P. Deleon	A. De La Cruz	Blue Star Ship Management Ltd
British Admiral	14.2.97	C.R. Shoolbraid	L.M. McEwan, P.N.W. Collins, L. Campbell	R.M. Lucas	BP Shipping Ltd
British Adventure	13.12.96	N.K. Price	I.C. Hodges, D.M. Way, F.D. Gilserian	—	BP Shipping Ltd
British Argosy	17.12.96	B. Wardman	A.J. Salisbury, C. Winterbottom, T. Bogdan	D.A. Simcox	BP Shipping Ltd
British Esk	13.9.96	J.M. Ronald	C.G. Vernon, J. Dziecielak, M. Rickaby	D.W. Bone	BP Shipping Ltd
British Ranger	24.2.97	W. Cameron	C. Beaton, P. Belchor, M. Graaskov	—	BP Shipping Ltd
British Reliance	30.1.97	N.G Greig	A.C. Cooper, J. Wales, E. Richardson	P. Davis	BP Shipping Ltd
British Resolution	25.9.96	J.N. Gregson	A.D. Grayson, C.G. Veron, P.E. Simpson	—	BP Shipping Ltd
British Resource	2.12.96	G.M. Hallett	P.J. Day, R. Hancock, A. Harańczyk	R. King	BP Shipping Ltd

Selected and Supplementary Ships (*contd*)

Name of Vessel	Last Return Received	Master	Observing Officers	Radio Officer (Where Carried)	Owner/Manager
British Skill	8.11.96	J. Atkins	J.G. Preston, M.P. Radochonski, J. Wales	—	BP Shipping Ltd
British Spirit	3.3.97	M.C. Roberts	S.J. Terry, A. Shearer, S. Ware	—	BP Shipping Ltd
British Steel	22.1.97	D.G. Olley	C.J. O'Farrell, J.R. Hollamby, S. Moore	—	Furness Withy (Shipping) Ltd
British Success	27.1.97	J. Smith	P.D.J. Green, A. Olbromski, A. Chruscinski	A.D. Moore	BP Shipping Ltd
British Tamar	10.6.96	T.L. Cullen	D.L.S. West, A. Chylak, G. Whammond	B. Doherty	BP Shipping Ltd
Broompark	†	—	—	—	Denholm (IOM) Ltd
Buenaventura	†	—	—	—	Jardine Ship Management (UK) Ltd
Buffalo	29.10.96	J.E. Bosell	N.M. Davies, S.C. Formstone, A.G.K. Hamilton	—	POETS Fleet Management Ltd
CGM Magellan	20.11.96	D. Bowman	J.L. McCorquodale, D.A. Grennan, A. Queally	K. Changezi	Furness Withy (Shipping) Ltd
C.S. Iris	24.1.97	R.J. Walter	M.W.F. Phillips, S.E. Harrison, J.D. Fitzgerald	W.E. Harrison	Cable & Wireless (Marine) Ltd
C.S. Monarch	†	—	—	—	Cable & Wireless (Marine) Ltd
C.S. Nexus	17.2.97	A.H. Giles	D.J. King, J.P. Vine, P.G. Lloyd	—	James Fisher & Sons (Liverpool) Ltd
C.S. Sovereign	22.8.96	C.D. Knight	M. Adams, D. Bathgate, N. Daniel	S. Steel	Cable & Wireless (Marine) Ltd
CSAV Los Angeles	†	—	—	—	Jardine Ship Management (U.K.) Ltd
CSO Constructor	9.1.97	T.D. Shannon	D.M. Vann, W.J.G. Mair, M.C. Porter	R.J. Scott	Coflexip Stena Offshore Ltd
Cableman	†	—	—	—	James Fisher & Sons (Liverpool) Ltd
Cable Innovator	†	—	—	—	Cable & Wireless (Marine) Ltd
Cable Installer	†	—	—	—	Cable & Wireless (Marine) Ltd
Cable Venture		—	—	—	Cable & Wireless (Marine) Ltd
Cabo Negro	3.4.96	V. Germuth	O.A. Holmen, B.R. Anguilar, L.A. Papa	C.J. Ogot	MOL Tankship Management Ltd
Caledonian Isles	18.9.96	I. Beggs	D. MacNeil, G. Gellatly, S. Wright	—	Caledonian MacBrayne Ltd
Canberra	4.11.96	P.D. Lumb	J.P. Bryant, A. Perkins, B.N. Rant	—	P&O Cruises Ltd
CanMar Conquest	7.11.96	Z.A. Jawed	S. Sharda, P.P. Homi, F. Gleeson	—	Canada Maritime Agencies (Montreal)
CanMar Courage	18.10.96	D.N. Chawla	S. Khanna, P.Bland, A.B. Issac	—	OOCL Agency Ltd
CanMar Endeavour	†	—	—	—	OOCL Agency Ltd
CanMar Fortune	17.2.97	M.B. Iranpur	P. Sindhwani, R. Bhalla, K. Chaterjee	—	OOCL Agency Ltd
CanMar Glory	13.2.97	V. Singh	J. Tremblay	—	Canada Maritime Agencies (Montreal)
CanMar Success	*	—	—	—	Canada Maritime Agencies (Montreal)
CanMar Triumph	†	—	—	—	Canada Maritime Agencies (Montreal)
CanMar Victory	†	—	—	—	Canada Maritime Agencies (Montreal)
Canterbury Star	24.2.97	D.J. Jones	R.L. Timtiman, R.P. Cayabyab, R.M. Cañete	—	Blue Star Ship Management Ltd
Cape Horn	14.2.97	P. Bode	A.L. Beck, C. Tadud, A. Papa	A. Esguerpa	MOL Tankship Management Ltd
Cardigan Bay	23.1.97	N.E. Lehmann-Taylor	S.J. McNeil, A.H. Abid, D.G. Evans	T.D. Tims	P&O Nedlloyd Ltd
Cartagena	†	—	—	—	Dole Fresh Fruit International Ltd
Cast Bear	*	—	—	—	Cast Line (Liverpool)
Cast Elk	2.8.96	Y.T.H. William	U. Soe Yee, U. Win Naing, U. Tin Nyunt	U Hla Baw	Cast Line (Liverpool)
Cast Lynx	*	—	—	—	Cast Line (Liverpool)
Cast Wolf	20.1.97	B. Ahmed	A.J. Ahad, Y.J. Nang, U. Win Naing	U S. Thein	Cast Line (Liverpool)
Celtic Ambassador	18.11.96	P. Marantonicz	L. Tozefowicz, Z. Pazurkiewicz	—	C.M. Willie & Co. (Shipping) Ltd

Celtic Warrior	†	—	—	—	C.M. Willie & Co. (Shipping) Ltd
Challenger	4.2.97	M.A. Harding	R.J. Chamberlain, J.T. Morse, P.C.T. Reynolds	—	NERC Research Vessel Services
Charles Darwin	29.10.96	R.C. Plumley	A.V. MacKay, P.T. Oldfield, R.J. Chamberlain	D. Sugden	NERC Research Vessel Services
Cheshire	12.8.96	C.O. Thomas	I.D. Handford, D.F. Morton, S.H. Gibson	—	Bibby Line Ltd
Chilham Castle	†	—	—	—	Kuwait Oil Tanker Co.
Chiquita Belgie	10.1.97	R.N. Cumbers	N.B. Onda, B.J. Bartlett, P.M. Lontoc	—	Great White Fleet Ltd
Chiquita Bremen	16.5.96	G.W. Weaver	P. Nicholson, R. Rata, L.S. Delfin	E. Lyon	Great White Fleet Ltd
Chiquita Brenda	10.3.97	R.G. Murch	G. Plummer, F. Pinera, L.S. Delfiin	—	Great White Fleet Ltd
Chiquita Deutschland	3.2.97	A. Ruszcynski	R.P.B. Billeo, D.E. Cabungcag, R.B.Arenal	—	Great White Fleet Ltd
Chiquita Frances	12.11.96	A. Barr	S. Ranoa, B. Englis, B.J. Bartlett	—	Great White Fleet Ltd
Chiquita Italia	22.7.96	W.V. Harwood	J. Hughes, P. Lontoc, N.D. Dalangin	E. Espera	Great White Fleet Ltd
Chiquita Nederland	2.5.96	N. Flinterman	R.J. Dobson, R. Cayabyab, R.B. Lapinid	J.P. Lorion	Great White Fleet Ltd
Chiquita Rostock	10.10.96	G.W. Weaver	R. Albasco, T.R. Falk, R.B. Arenal	—	Great White Fleet Ltd
Chiquita Scandinavia	9.4.96	N. Colling	J.H. Clamp, R. Pogoy, J. Valero	R.S. Diana	Great White Fleet Ltd
Chiquita Schweiz	11.4.96	J.K. Wilkinson	A.W. Barr, D.H. Hoarmogino, H.J.M. Katindoy	H.I. Salarzon	Great White Fleet Ltd
Cirolana	†	—	—	—	MAFF Fisheries Laboratory
City of Barcelona	†	—	—	—	Denholm Ship Management (UK) Ltd
City of Cape Town	8.1.97	K.S. Hardy	J. Cross, S.L. Rayson, D.J. Vickery	P.A. Whyley	P&O Nedlloyd Ltd
City of Lisbon	24.5.96	R.H. Nightingale	L.A. Smith, D.J. Sweet, G.I. Hamer	—	Andrew Weir Shipping Ltd
City of New Westminster	*	—	—	—	Jardine Ship Management (HK) Ltd
City of Sunderland	7.10.96	J.C. Barton	H.S. Wright, J.C. Hague, T.T. George	—	Denholm Ship Management (UK) Ltd
Claymore	†	—	—	—	Caledonian MacBrayne Ltd
Clinton K	†	—	—	—	John McRink & Co. Ltd
Clydebank	13.6.96	P.G.H. Stapleton	S.L. Galbraith, E.M. Pallister	—	Andrew Weir Shipping Ltd
Colombo Bay	3.3.97	B.V. Chipperfield	M.K. Hands, L. Rigby, C.P.J. Robins	—	P&O Nedlloyd Ltd
Columbus	†	—	—	—	V.Ships Marine Ltd
Columbus Valparaiso	†	—	—	—	Jardine Ship Management (UK) Ltd
Condor Arrow	18.10.96	S. Behl	R.K. Pandy, U.M. Thanawala, A. Ratten	—	Gearbulk (UK) Ltd
Coppename	4.11.96	D. W. Bunyan	E.E. Ephraim, C. Bryson, E.C. Wilson	—	Marine Management Services Ltd
Cordella	10.2.97	A. Ball	J.W. Wilson, W.H. Jackson, J.W. Brooks	K. Batty	Marr Vessel Management Ltd
Cormorant Arrow	†	—	—	—	Westfleet Management AS
Corystes	19.2.97	B.A. Chapman	—	—	MAFF Fisheries Laboratory
Cotinga	21.1.97	M. Madziar	P. Gorski, A. Guzik, J. Bielawski	—	F.T. Everard & Sons Ltd
Cotswold	27.11.96	S.B. Tudor	J. Khare, S. Singh, R.K. Srivastava	M. Miranda	P&O Bulk Shipping Ltd
Cottica	7.1.97	D.J. Robinson	C. Falculan, S. Magboo	—	Marine Management Services Ltd
Criscilla	*	—	—	—	Marr Vessel Management Ltd
Dallington	2.10.96	E. Gaffney	M. Arden, P. Dawson, G. Davis	—	Stephenson Clarke Shipping Ltd
Dana Anglia	17.2.97	J.V. Christensen	W. Simonsen, E.W. Olsen, F.L. Jensen	—	DFDS Ltd
Discovery	27.1.97	K.O. Avery	R.M. Atkinson, R.J. Chamberlain, J.T. Morse	D.M. Sugden	NERC Research Vessel Services
Discovery	30.7.96	A. Collee	J. Bloeman, T. Van Hoemeghen	E. Alfonso	SubSea Offshore Ltd
Discovery Bay	14.2.97	A.J. Ball	S.C. Lugg, M.L. Mullins, L.M. Butler	E.B. Stephenson	P&O Nedlloyd Ltd
Dominica	†	—	—	—	Ugland Interocean Management Ltd
Donnington	5.6.96	D.M. Frost	S.J. Heggie, D.M. Shaw, R.H. Ginger	—	Stephenson Clarke Shipping Ltd
Dragon Nias	†	—	—	—	Neptune Ship Mgmt Service (Pte) Ltd
Duhallow	21.1.97	M.J. Walker	G. Vathiath, K.C. Joshi. M.S. Noronha	L.D. Potnis	P&O Bulk Shipping Ltd

Selected and Supplementary Ships (*contd*)

Name of Vessel	Last Return Received	Master	Observing Officers	Radio Officer (Where Carried)	Owner/Manager
Durrington	†	—	—	—	Stephenson Clarke Shipping Ltd
Eagle	30.12.96	P.D. Kelly	B. Forsyth, W. Russell, W. Grabzec	—	Mobil Shipping Co. Ltd
Eagle Arrow	†	—	—	—	Gearbulk (UK) Ltd
Eastern Bridge	30.12.96	S.J. Honey	K.C. Taylor, M. Westcott, K.C. Townley	—	Ropner Shipping Services Ltd
Ebalina	†	—	—	—	Shell Marine Personnel (IOM) Ltd
Eburna	†	—	—	—	Shell Marine Personnel (IOM) Ltd
Elk	19.9.96	B. Luke	P.A. Marcon, J.A. Robbie, J.T. Jamieson	C.L. Keeble	POETS Fleet Management Ltd
Elke	11.11.96	W.A. Tebbutt	R. Jison, F. Octa, A. Barr	—	Great White Fleet Ltd
Emily C	*	—	—	—	Carisbrooke Shipping Ltd
Encounter Bay	23.10.96	R. Moxon	C.L. Guy, D.R. Lewis, I.D. Hebborn	R.F. Davies	P&O Nedlloyd Ltd
Endeavor	22.10.96	I. Beetham	N.G. Young, M.J.J. Irvine, J. Barrett	M.N. Pitcher	Souter Shipping Ltd
English Star	11.2.97	N.J. Barr	P.M. Ragaspi, L.B. Cabardo, E. Española	—	Blue Star Ship Management Ltd
Enterprise	†	—	—	—	Denholm Ship Management (UK) Ltd
Equinox	18.3.97	P.A. Helm	D. Richardson, S.J. Alder, J. Barrett	M.A. Walsh	Souter Shipping Ltd
Eridge	6.2.97	D.F. Heaselden	D.S. Baweja	B.G. Patankar	P&O Bulk Shipping Ltd
Erradale	24.2.97	G.R. Proud	G.P. Eyles, A.C. Dunnings, R.O. Gracilla	—	The China Navigation Co. Ltd
Ervilia	†	—	—	—	Shell Marine Personnel (IOM) Ltd
Esplanade	16.9.96	R.W. Purser	R.M. Warner, J.M. Towler, I. Howie	F. Wilson	Souter Shipping Ltd
Euplecta	†	—	—	—	Shell Marine Personnel (IOM) Ltd
European Shearwater	†	—	—	—	James Fisher & Sons plc
European Trader	†	—	—	—	P&O European Ferries Ltd
Excelsior	30.12.96	P.C. Harris	G.M. Taylor, M.H.R. Williams, C. MacSweeney	R.J. Stevens	Souter Shipping Ltd
Exemplar	9.1.97	I. Beetham	N. Atkinson, J.H. Isaac, I. Howie	D. Williams	Souter Shipping Ltd
Eye of the Wind	8.5.96	A.R. Timbs	—	—	Crediton Country Courier
Faki III	†	—	—	—	Sea Falcon Fishing Co. Ltd
Falcon Arrow	10.10.96	D.A. Mni	C.H.V. Sareesh, R.J. George, R. Srikanth	V. Parab	Gearbulk (UK) Ltd
Federal Bergen	*	—	—	—	Anglo-Eastern Ship Management Ltd
Finch Arrow	†	—	—	—	Gearbulk (UK) Ltd
Flinders	*	—	—	—	ASP Ship Management
Forthbank	19.4.96	W. Campbell	A.D. MacPherson, J. Choma, R. Baran	M. Jarecki	Andrew Weir Shipping Ltd
Foylebank	13.1.97	P.S. Chase	G.R. Armstrong	Y. Krasnonosov	Andrew Weir Shipping Ltd
Francis Drake	†	T. Mansell	—	—	Ocean Youth Club
Fremantle Star	†	—	—	—	Blue Star Ship Management Ltd
Frines	25.11.96	V.K. Tolmachyov	G. Vadim, P.N. Ivanovich, D.Y. Inanovich	G.S. Ivanovich	Intership Navigation Co. Ltd
Front Guider	†	—	—	—	Nordic Oriental Shipmgmt Pte Ltd
Front Rider	†	—	—	—	Nordic Oriental Shipmgmt Pte Ltd
Fullnes	†	—	—	—	Intership Navigation Co. Ltd
General Delgado	†	—	—	—	Jebsens Ship Mgmt (Bergen) AS
General Tirona	†	—	—	—	Jebsens Ship Mgmt (Bergen) AS

General Villa	†	—	—	—	Jebsens Ship Mgmt (Bergen) AS
Glen Maye	†	—	—	—	MOL Tankship Management Ltd
Glen Roy	23.5.96	P. Megraw	P. Butijer, M. Bradas	I. Dadua	MOL Tankship Management Ltd
Golden Duke	*	—	—	—	Jardine Ship Management Ltd
Gracechurch Sun	†	—	—	—	C.M. Willie & Co. (Shipping) Ltd
Greater Manchester Challenge	†	—	—	—	Ocean Youth Club
Greenpeace	†	—	—	—	Greenpeace Marine Division
Gull Arrow	†	—	—	—	Westfleet Management AS
HV Fox	11.9.96	J. Harvey	N. Miller, K. Walsham, C. Flanagan	—	Marr Vessel Management Ltd
Hadiyah	2.1.97	M.L.J. Aranha	K. Ashraf, S. Zubeir, S. Haider	F.C. Torres	Kuwait Oil Tanker Co.
Harmac Dawn	25.2.97	R.P. Yadav	M. Kohli, J. Fernandes. A. Mallika	A. Agharkar	Barber Ship Management AS
Harrier	†	—	—	—	Mobil Shipping Co. Ltd
Hato Arrow	23.7.96	A. Oraas	A. Javellana, O. Riisem, L. Puchero	C. Dharmasena	Gearbulk (UK) Ltd
Havdrott	7.1.97	C.M.J. Payton	D. McCracken, S. Harvey	—	Bergesen d.y. ASA
Havjarl	23.11.96	T.A. Andrews	F. Dureza, R.S. Plaza, S. Harvey	M. Duttida	Bergesen d.y. ASA
Havkong	18.10.96	D.J. Elson	L.V. Juban, F.P. Sacro, C.J. Garner	A.M. Yao Yao	Bergesen d.y. ASA
Hawk	8.11.96	D.P. Kelly	M. Sunil, D.S. Sidhu, R. Colm	A. Rey	Mobil Shipping Co. Ltd
Hebridean Isles	†	—	—	—	Caledonian MacBrayne Ltd
Hekabe	†	—	—	—	Bergesen d.y. ASA
Helene Maersk	†	—	—	—	A.P. Moller
Helios	16.9.96	T.N. Ferguson	M.A. Pagente, M.V. Cayone	—	Bergesen d.y. ASA
Hemera	12.12.96	T.H. Goldsmith	M. Davalos, B. Lelis, J. Perez	C. Sojania	Bergesen d.y. ASA
Hemina	28.11.96	P.R. Dew	I. Landeta Bilbao, J.L. Echeandia, M. Steel	C. Apdo	Bergesen d.y. ASA
Hesiod	29.7.96	R. Beresford	F. Sacro, A. Cabrillas, R.M. Deyes	A.S. Suarez	Bergesen d.y. ASA
Hoegh Duke	†	—	—	—	Leif Hoegh & Co. ASA
Hoo Kestrel	2.12.96	M. Mellor	P. Gibson	—	R. Lapthorn & Co. Ltd
Hornbeck Integrity	21.11.96	R. Main	D. O'Conner, A. Campbell, J. Heijer	—	Hornbeck Offshore Ltd
Hornbeck Invincible	27.1.97	A.J. Hughes	J.A. MacKinnon, T.F.C. Byrne, R. Greig	—	Hornbeck Offshore Ltd
Hornbreeze	11.2.97	J.M. Collis	W.D. Aizmamento, R.D. Degollado, C.L. Molina	B.Z. Wisecooriya	London Ship Managers Ltd
Horncloud	3.3.97	T.W. Abbott	D.E. Dumagan, J.R. Ramiro, A. Jayasooriya	W.P. Chanrasekera	London Ship Managers Ltd
Hyundai Vancouver	†	—	—	—	Wallem Ship Management (HK) Ltd
Ibex	15.5.96	N.C.E. Spencer	D.J. Crerar, P.J. Hudson	—	Pandoro Ltd
Ibis Arrow	13.6.96	F. Oavic	E. Tuna, E.B. Ganboa, M.L. Jose	I.J. Lagutin	Gearbulk (UK) Ltd
Ibn Abdoun	†	—	—	—	United Arab Shipping Co. (S.A.G.)
Iolair	14.2.97	M. Ramsbottom	A. Milne	—	Reading & Bates (UK) Ltd
Ironbridge	27.1.97	I.B. Middleton	M.A. Clarey, G.S.J. Rice, M. Rowssean	—	Furness Withy (Shipping) Ltd
Island Princess	25.7.96	C.J. Sampley	A.J. Williams	D. Radcliffe	P&O Cruises Ltd
Isle of Arran	†	—	—	—	Caledonian MacBrayne Ltd
Isle of Lewis	25.11.96	M. Kennedy	K.M. Macdonald, L.G. Mackenzie, G.S. Robertson	—	Caledonian MacBrayne Ltd
Isle of Mull	13.1.97	C.W. Billimore	A.H. Colquohoun, T.G. Moore	—	Caledonian MacBrayne Ltd
Isocardia	14.1.97	C. Scott	J.I. Doyle, A.S. Russell, P.A.H. Labine	—	Shell Marine Personnel (IOM) Ltd
Isomeria	20.1.97	D.C.J. Still	A.P. Martin, A.P. Elson, M.A.J. Thomson	W.C. Bennett	Shell Marine Personnel (IOM) Ltd
Ivybank	16.9.96	E.M. Pallister	K. Jaroslaw, J. Storozuk, G.R. Henderson	S. Zbigniew	Andrew Weir Shipping Ltd
Jahre Spirit	†	—	—	—	Wallem Ship Management (HK) Ltd

Selected and Supplementary Ships (*contd*)

Name of Vessel	Last Return Received	Master	Observing Officers	Radio Officer (Where Carried)	Owner/Manager
Jahre Spray	†	—	—	—	Wallem Ship Management (HK) Ltd
James Clark Ross	16.9.96	C.R. Elliott	A.P. Wallis, J. Harper, B. McJury	S.J. Mee	British Antarctic Survey
Jarikaba	11.3.97	D.A. Peden	J. Clemente, R. Mitra, J. Charlton	—	Marine Management Services Ltd
Jean	27.1.97	M.D. Nash	R.O. Roberts, R. Labial, W.D. Cortazar	—	Great White Fleet Ltd
Jervis Bay	11.3.97	J.L. Peterson	N.A. Voss, W.J. Stoker, G. Wade	—	P&O Nedlloyd Ltd
John Laing	†	—	—	—	Ocean Youth Club
Jostelle	15.11.96	K.E. Greest	N. Sumpton, C.S. Shaw, P.V. Curran	C.A. Dillon	Souter Shipping Ltd
Joy	4.2.97	H.J. Mauger	M.D. Cherry, E.O. Rollo, F.D. Momongan	—	Great White Fleet Ltd
Kagoro	*	—	—	—	Acomarit (UK) Ltd
Kalahari	*	—	—	—	South African Marine Corp Ltd
Kazimah	5.11.96	P.J. Ward	A.I. Osman, A.A. Latif, M. Mejalhim	B. Nalam	Kuwait Oil Tanker Co.
Kedah	†	—	—	—	Kapal Management (Pte) Ltd
Keta Lagoon	†	—	—	—	Black Star Line Ltd
Kintampo	20.12.96	W. Anderson	D.B. Minnow, J.N. Aktoh	N.C. Hermosa	Acomarit (UK) Ltd
Kiwi Arrow	†	—	—	—	Gearbulk (UK) Ltd
Knock Allan	16.1.97	M. Holland-Lloyd		—	Red Band AS
Kukawa	18.11.96	B.N. Jones	J.N.A. Attoh, F.S.K. Avotri, W.E. Thompson	R. Gonzaga	Acomarit (UK) Ltd
Kumasi	25.9.96	W.E.L. Godsell	I.Osei-Amoako, S. Oduro, A. Asamoah	V. Arcegono	Acomarit (UK) Ltd
Lackenby	31.12.96	G. Mair	S.C. Chase, G.D. Webb, J.P. Whiteley	—	Ropner Shipping Services Ltd
Lady Barbara	*	—	—	—	Pacific Navigation Ltd
Lady Rebecca	†	—	—	—	John McRink & Co. Ltd
Lampas	†	—	—	—	Shell Marine Personnel (IOM) Ltd
Larkfield	27.8.96	A.D. Chapman	L. Lumanglas, A. Canaban, D. Muzic	S. Eule	Westfleet Management AS
Leonia	17.1.97	B. Cosgrove	S.D. Crookes, A.A. Pathan, S.J. Bankon	—	Shell Marine Personnel (IOM) Ltd
Leopard	*	—	—	—	Pandoro Ltd
Lepeta	17.5.96	P.T.I. Pinches	D.E. Taylor, A.S. Russell, S.M.F. Masud	—	Shell Marine Personnel (IOM) Ltd
Licorne Pacifique	30.12.96	M. Kennedy	S. Cornita, W. Banto, A. Castañares	E. Barricos	Sosema S.A.
Lima	20.2.97	D.J. Conway	M.J. Watts, R.A. Wiltshire, R.K. Dimalulangan	—	Shell Marine Personnel (IOM) Ltd
Lincolnshire	6.9.96	R.A.F. Edwards	M.L. Forgenie, D.J. Levins, R.P. MacSweeney	G.J. Simpsom	Bibby Line Ltd
Lincoln Universal	29.5.96	R. Hutchinson	L. Montilla, D.F. Paca, M.B. Simogan	L. Niviella	London Ship Managers Ltd
London Enterprise	27.8.96	M.C. Littlewood	J. Sage, S. Proctor, A. Jeffery	D. Hicklin	London & Overseas Freighters (UK)
London Glory	24.2.97	J.W.W. Peters	T.C. Swatton, R. Ennels, I.C. Stevenson	—	London & Ov erseas Freighters (UK)
London Spirit	8.1.97	R. Fullagar	W. Goswell, P. Baskerville, J.F. Peard	P.A. Murray	London & Overseas Freighters (UK)
London Splendour	13.2.97	R.E. Mayman	C. McCulloch, P. Baskerville, M. Roberts	—	London & Ov erseas Freighters (UK)
London Victory	15.1.97	C.D. Bailey	S.J.F. Millar, I.V. Hughes, W. Hand	F.R. Gerstner	London & Overseas Freighters (UK)
Lord Nelson	29.4.96	J.P.H. Fisher	M.L.M. Smith, R.A. Hamilton, G.R. Miles	—	Jubilee Sailing Trust Ltd
Lord of the Isles	†	—	—	—	Caledonian MacBrayne Ltd
Lough Foyle	†	—	—	—	Heyn Engineering & Shipping Service
Lucky Bulker	13.6.96	W.T. Wilmott	J. Alexander, D. Chowallur, K. Sukhla	R. Sudhame	Valles Steamship Co. Ltd

Maersk Gannet	7.1.97	S. McCollin	B. Cowell, D. Tomlinson, J. Davies	R. Walby	Maersk Co. (IOM) Ltd
Maersk Shetland	27.8.96	W.T. Munro	R. Orange, C. McCarthy, J.A. Struthers	—	The Maersk Co. Ltd
Maersk Somerset	22.1.97	J. Blake	N.B. Fagan, G. Moir, R. Kulkarni	—	The Maersk Co. Ltd
Maersk Stafford	21.10.96	J. Blake	B. Murnin, R. Thompson, T. Workman	—	The Maersk Co. Ltd
Maersk Surrey	*	—	—	—	The Maersk Co. Ltd
Maersk Sussex	17.2.97	I.A.J. Goveas	S. Faint, B. Cowell, G. Barton	—	The Maersk Co. Ltd
Magnolia	21.1.97	K.L. Beverley	C.W. Blacker, T.R. Bray, N. Alvares	—	Mobil Shipping Co. Ltd
Mairangi Bay	25.2.97	A.W. Ellis	L.H.M. Johnson, Z. Kuzmanov, H.F. Radha	P.I. Pegg	P&O Nedlloyd Ltd
Mark C	*	—	—	—	Carisbrooke Shipping plc
Mary C	*	—	—	—	Carisbrooke Shipping plc
Matco Clyde	12.6.96	J.M. Bell	I. Appleby, A. Newman, S.A.S. Olbison	—	Mobil Shipping Co. Ltd
Matco Thames	23.7.96	K.M. Calladine	M.S. Trickey, M. Jones, D.G. Laughton	—	Mobil Shipping Co. Ltd
Mbashi	14.5.96	R. Thomas	N.M. Golder, E. Mansueto, R. De La Cruz	A. Cagasan	Furness Maritime Services Ltd
Med Singapore	†	—	—	—	Tecto N.V.
Melbridge Force	*	—	—	—	Elite Shipping A/S
Merchant Paramount	19.4.96	P.S. Sirohi	P.A. Gordon, R. Dogra, B. Kumar	—	V.Ships (UK) Ltd
Merchant Patriot	†	—	—	—	V.Ships (UK) Ltd
Merchant Premier	13.2.97	C.W. Harvey	I. Banerji, V. Samaranayake, V. Padmanabhan	D.A. Kulakarni	V.Ships (UK) Ltd
Merchant Prestige	4.12.96	A.K. Bakshi	A. Ahmed, S. Chanrasekhar, R. Gupta	—	V.Ships (UK) Ltd
Merchant Prince	30.7.96	K.H. Halstrick	R.S. Bajwa, S.K. Sharma, B.S. Pabla	A.K. Biswas	V.Ships (UK) Ltd
Merchant Princess	†	—	—	—	V.Ships (UK) Ltd
Merchant Principal	9.8.96	R.C. Avenin	A.H. Shankar, N.T. Angade, P. Limbu	S.C. Kulakarni	V.Ships (UK) Ltd
Mineral Prosperity	3.12.96	K. Nayyar	G.K. Mallick, P. Kumar, A. Malik	—	Anglo-Eastern Ship Mgmt Ltd
Mineral Venture	17.2.97	A.A. Kadkol	W.H. Ching, M.N. Amin, J.A. Cuenca	L.K. Fai	Wah Kwong Shipping Agency Co. Ltd
Mineral Zulu	30.12.96	A.M. David	M.Z. Islam, S. Prayaua, A.R. Verma	—	Anglo-Eastern Ship Mgmt Ltd
Moraybank	21.10.96	S.R. Allaker	V. Vorobev, G.R. Henderson, R.H. Barker	R. Ruchkin	Andrew Weir Shipping Ltd
Moreton Bay	3.3.97	C.J.A. Hughes	A.N. Murray, W.J. Coxon, D.R.N. Cropley	—	P&O Nedlloyd Ltd
Mountain Cloud	†	—	—	—	Norbulk Shipping (UK) Ltd
Murex	†	—	—	—	Shell Marine Personnel (IOM) Ltd
Myrina	*	—	—	—	Shell Marine Personnel (IOM) Ltd
Nand Nidhi	25.11.96	—	—	—	Essar Sisco Ship Mgmt. Co. Ltd
Nandu Arrow	†	—	—	—	Gearbulk (UK) Ltd
New Generation	†	—	—	—	James Fisher & Sons plc
Newport Bay	27.1.97	A.C. McCulloch	M.J. Trafford, L. Rigby, R. Hawthorne	—	P&O Nedlloyd Ltd
Newton	*	—	—	—	Royal Maritime Auxiliary Service
Nivaga II	†	—	—	—	Government of Tuvalu
NOL Delphi	3.2.97	J.G. Rosie	J.G. Travis, D.R. Moody, G. Collier	P.A. Gooch	P&O Nedlloyd Ltd
NOL Lageno	19.12.96	C.R. Short	L.M. Butler, J.P. Melles-Sawyer, M. Sutcliffe	P.I. Pegg	P&O Nedlloyd Ltd
NOL Risso	11.2.97	K.W. Smith	A.N. Murray, D. Rogers, M.J. Turner	N. Matthews	P&O Nedlloyd Ltd
NOL Steno	19.12.96	K.D. Campbell	A. Firman, J.W.S. Tolman, E.A.E. Garrick	R.C. Masters	P&O Nedlloyd Ltd
Nolizwe	†	—	—	—	South African Marine Corp. Ltd
Norna	18.2.97	D.L. Rattray	A.R. Davidson, D.A. Smith, M.B. Styles	—	Scottish Office Agr. & Fisheries Dept.
Norquest	*	—	—	—	Phoenocean Ltd
Norrisia	†	—	—	—	Shell Marine Personnel (IOM) Ltd
Norsea	†	—	—	—	North Sea Ferries Ltd

Selected and Supplementary Ships (*contd*)

Name of Vessel	Last Return Received	Master	Observing Officers	Radio Officer (Where Carried)	Owner/Manager
Northella	†	—	—	—	Marr Vessel Management Ltd
Northern Desire	20.1.97	M.K. Wainman	A.V. Robinson, T. Krzynski, A. Kaczmarczyk	—	Marr Vessel Management Ltd
Northern Horizon	†	—	—	—	Marr Vessel Management Ltd
Northern Prince	†	—	—	—	Marr Vessel Management Ltd
Northia	23.1.97	R.N. Richards	J. Fielding, C. Green, S. Emms	—	Shell Marine Personnel (IOM) Ltd.
Oakby	21.5.96	A. Crofts	A. Weerasekera, P. Sandakelin, C. Abeyagunewardena	—	Ropner Shipping Services Ltd
Ocean Defender	*	—	—	—	EarthKind
Ocean Goose	†	D.A. Church	—	—	Captain D.A. Church
Olivebank	†	—	—	—	Andrew Weir Shipping Ltd
OOCL Assurance	21.5.96	P.T. Galea	P.R. O'Regan, S. Godolphin, K.F. Kelleher	G. Wilson	OOCL (UK) Ltd
OOCL Bravery	31.12.96	T.N. O'Driscoll	P.H. Woodcock, W.J. Thompkins, J.N. Backwill	M.I. McGregor	OOCL Agency Ltd
OOCL Britain	4.2.97	J.E. Huddleston	W.H. Kong, J. Hann, S.L. Leung	—	OOCL Agency Ltd
OOCL Canada	2.1.97	D.R. Llewellyn	P.G. Ivory, D.R. Duffy, P.R. O'Regan	—	OOCL Agency Ltd
Oriana	13.1.97	I. Gibb	K.N. Austin	M. Gronn	P&O Cruises Ltd
Orient Star	29.10.96	R.G .D'Souza	S.S. Singh, B. Pawan, B. Adi	V.N.S. Potty	Acomarit (UK) Ltd
Oriental Bay	3.2.97	A.P. Talbot	R.B. Gurney, A.U. Rehman, R.R. Littlefield	—	P&O Nedlloyd Ltd
Oriental Venture	4.2.97	D.R. Lewis	J.H. Brining, E.M. Morrice, B.N. Ross	—	BP Shipping Ltd
Orion Reefer	†	—	—	—	Wallem Ship Management (HK) Ltd
Ormond	19.12.96	J.E. Sinnott	R.T. Mattos, S.H. Avery, N. Kumar	E.A. Almeida	P&O Bulk Shipping Ltd
Pacific Crane	†	—	—	—	James Fisher & Sons plc
Pacific Guardian	†	—	—	—	Cable & Wireless (Marine) Ltd
Pacific Pintail	4.7.96	M.J. Stares	J.B. Appleby, W.M. Barry, T. Dixon	T. McMahon	James Fisher & Sons plc
Pacific Princess	†	—	—	—	P&O Cruises Ltd
Pacific Sandpiper	9.8.96	D. Marr	P.F. Goodchild, J.P. Gaskin, C.A. Bates	C.P. Brockbank	James Fisher & Sons plc
Pacific Swan	†	—	—	—	James Fisher & Sons plc
Pacific Teal	16.9.96	B.D. Miller	R.P.C. Mitcheson, J.G. Worthington, D. Ilderton	A.R. Watt	James Fisher & Sons plc
Pacific Universal	16.4.96	C.M. Turner	J.G. Gesulgon, T. Priyantha, I.P. Malano	P. Sathyamurthy	London Ship Managers Ltd
Pacific Venture	†	—	—	—	MOL Tankship Management Ltd
Pacific Wave	27.1.97	W.A.C. Gill	G.D. Torre, Y.S. Reddy, E.B. Briones	J.O. Ramos	MOL Tankship Management Ltd
Palliser Bay	2.1.97	S.D. Smith	C.J.P. Seares, C.N. Hallam, M. Stewart	—	P&O Nedlloyd Ltd
Panther	21.10.96	M. Leech	A.A. Facey, E.C. Morton, G.R. Henderson	—	POETS Fleet Management Ltd
Pegasus Bay	28.10.96	D.A.K. Bamford	A.S. Deans, B.P. Murphy, M. Proud	—	P&O Nedlloyd Ltd
Pelican Arrow	15.3.96	B.S. Gill	G. D'Souza, K.I. Thomas, I.S. Dougal	S. Usman	Gearbulk (UK) Ltd
Peninsular Bay	7.1.97	P.J.R. Manson	G. Holland, J. Spencer, M. Voisey	—	P&O Nedlloyd Ltd
Petro Fife	†	—	—	—	Petroleum Shipping Ltd
Petro Tyne	4.7.96	K.J. Lightbody	J.F. Pykets, C. Moss, I. Roberts	—	Petroleum Shipping Ltd
Pioneer Leader	*	—	—	—	Wallem Ship Management (HK) Ltd
Pisces Pioneer	†	—	—	—	T.& J. Harrison Ltd
Pisces Trader	25.10.96	M.A. Pillai	R. Darbhamulla, S.Y.H. Rizivi, N.P.S. Bharaj	V.M. Dandekar	T.& J. Harrison Ltd

Pride of Bilbao	†	—	—	—	P&O European Ferries (Portsmouth) Ltd
Pride of Cherbourg	16.9.96	C.E. Banks	R.T. Harding, A.C. Adams	—	P&O European Ferries (Portsmouth) Ltd
Pride of Hampshire	21.10.96	A.F. Bonehill	D. Bathgate, D.C. Ray, D. Worrin	—	P&O European Ferries (Portsmouth) Ltd
Pride of Le Havre	†	—	—	—	P&O European Ferries (Portsmouth) Ltd
Pride of Portsmouth	12.11.96	C.P. Douglas	N.J. Carter, N. Barrington, M. McDougall	—	P&O European Ferries (Portsmouth) Ltd
Pride of Suffolk	†	—	—	—	P&O European Ferries (Felixstowe) Ltd
Providence Bay	11.12.96	D.L. Batchelor	A.M. Jameson, R.M. Eaton, K. Krishnakumar	—	P&O Nedlloyd Ltd
Puerto Cortes	†	—	—	—	Unileasing A/S
Puma	22.10.96	I. Bunning	S.N. Parvin, M. Ingham, N. Whitaker	P. Headley	POETS Fleet Management Ltd
Putford Achilles	†	—	—	—	Boston-Putford Offshore Safety Ltd
Putford Ajax	2.12.96	G.A. Cubbison	I.R. Buley, C. Veitch, G. Collins	—	Boston-Putford Offshore Safety Ltd
Putford Aries	29.11.96	R.A. Stockley	M.A. Chapman, P.G. McCardle, K. Hopkins	—	Boston-Putford Offshore Safety Ltd
Putford Puffin	18.7.96	J. Barnard	J.E. Marshall, C. Pook, P. Brown	—	Boston-Putford Offshore Safety Ltd
Putford Shore	27.1.97	C.H. Pearce	D.G. Cook, R.A. Aldred, D.A. Keeton	—	Boston-Putford Offshore Safety Ltd
Putford Skua	24.2.97	P. Burrows	A. Farmery, G. Wilson, G. Smith	—	Boston-Putford Offshore Safety Ltd
Pytchley	27.1.97	P.A. Miley	K.B. Ferries, R.S. Chauham, M. Kumar	J.K. Bhada	P&O Bulk Shipping Ltd
Queen Elizabeth 2	10.12.96	K.H. Stanley	R. Keir, S. Whalley, R. Irvine	—	Cunard Line Ltd
Queensland Star	3.2.97	M.J. McGilvray	J.R.C. Trimanez, D.L. Montana, R.T. Santos	—	Blue Star Ship Management Ltd
Raven Arrow	*	—	—	—	Gearbulk (UK) Ltd
Ravenscraig	13.2.97	B.F. Middleton	K. Bryant, J. Parkin, I. Birch	—	Ropner Shipping Services Ltd
Regent Park	†	—	—	—	Rederiet Otto Danielsen
Regina Oldendorff	9.4.96	S. Arun	W. D'Sylvia, A. Skwierawski, N. Argulla	C. Godinho	Egon Oldendorff (HK) Ltd
Repulse Bay	11.3.97	K.P. Byrne	A.A. Ward, M.P. Willis, R.K. Jones	—	P&O Nedlloyd Ltd
Repulse Bay	†	—	—	—	Orient Ship Management Ltd
Resolution Bay	10.3.97	A.M. Tweedie	B.K. Quayson	M.R.T. Hannan	P&O Nedlloyd Ltd
Rhone	†	—	—	—	United Ship Management Ltd
Rixta Oldendorff	†	—	—	—	Egon Oldendorff (HK) Ltd
Rothnie	*	—	—	—	Sandford Ship Management Ltd
Royal Princess	27.1.97	M.J.F. Moulin	Z.C. Joachim, R. Robson, M. Grown	—	P&O Cruises Ltd
Royal Star	†	—	—	—	Blue Star Ship Management Ltd
St Clair	17.2.97	J. Cowie	G. Grove, E. MacKay, E. Smith	—	P&O Scottish Ferries Ltd
St Helena	28.10.96	D.N.R. Roberts	K. McBride, R.C. Huxtable, R.J. Murray	—	Curnow Shipping Ltd
St Lucia	†	—	—	—	Ugland Interocean Management Ltd
St Rognvald	†	—	—	—	P&O Scottish Ferries Ltd
St Sunniva	13.2.97	W.J. Duncan	I.W. Easton, W.B. MacKay, J.S. Gunn	—	P&O Scottish Ferries Ltd
Sachem	13.2.97	R.B. Stuart	C. Scothern, D.S. McIntosh, A. Robertshaw	—	Mobil Shipping Co. Ltd
Sagacity	17.1.97	T. Hatalski	Z.W. Fiszer, J. Sieradzki	—	F.T. Everard & Sons Ltd
Saga Horizon	*	—	—	—	Patt Manfield & Co. Ltd
Saga Wind	*	—	—	—	Patt Manfield & Co. Ltd
Saldanha	*	—	—	—	SAFSHIP Agency
Saudi Splendour	23.9.96	C.J. Graham	D.M. Hopkin, G.M. Douglas, A. Sanqual	J. Bacero	Mobil Shipping Co. Ltd
Scillonian III	†	—	—	—	Isles of Scilly Steamship Co. Ltd
Scirocco Universal	3.2.97	G.A. McEwan	A.N. Mudalige, T. Sobolak, R. Pienaar	M.A. Brewer	London Ship Managers Ltd
Scotia	†	—	—	—	Marr Vessel Management Ltd
Scott Guardian	14.10.96	J.A. Mackenzie	L.D. Pettitt, J.A. Nicholson, J.G. Blair	—	Hornbeck Offshore Ltd

Selected and Supplementary Ships (*contd*)

Name of Vessel	Last Return Received	Master	Observing Officers	Radio Officer (Where Carried)	Owner/Manager
Scottish Star	7.2.97	P. Buckley	B. Barrita, C.S. Abadicio, A. Garfin	—	Blue Star Ship Management Ltd
Seillean	9.12.96	D. Tobin	J. Sellick, V. McAdam, J.Y. Simpson	—	Reading & Bates (UK) Ltd
Seki Cedar	12.3.97	D. Thackray	J.C. Hague, P. Murphy, T. Nyunt	—	Denholm Ship Management (UK) Ltd
Seki Pine	30.1.97	P.W. Jackson	I.D. Tranter, J.C. Hague, M.K. Judson	—	Denholm Ship Management (UK) Ltd
Selectivity	12.11.96	T.L. Jeffery	C.E. Langley	—	F.T. Everard & Sons Ltd
Semac 1	†	—	—	—	European Marine Contractors Ltd
Seniority	17.12.96	L. Pink	A. Jones, P. Branagan, C. Hellier	—	F.T. Everard & Sons Ltd
Shabonee	7.8.96	I.D. McKenzie	N. O'Driscoll, L.L. McCarthy, D. Moth	—	Mobil Shipping Co. Ltd
Shenzhen Bay	7.1.97	D. Lax	S.J. Young, J.B. Harbord, K. Fuller	—	P&O Nedlloyd Ltd
Shetland Service	20.12.96	M. Hooson	I.G.C. Ferguson, N. Sheard, T. Catchpole	—	Tidewater Marine (UK) Ltd
Siliqua	20.3.96	D.A. Rayfield	C. Green, M.S. Hasan, G.D. Nicholls	—	Shell Marine Personnel (IOM) Ltd
Singapore Bay	9.1.97	J.G.W. Dixon	J.S. Orr, A. Murray, L.S. Mahdi	—	P&O Nedlloyd Ltd
Siratus	24.2.97	D. Freeman	R. Jopia, A. Rashid, J.M. Bostone	—	Shell Marine Personnel (IOM) Ltd
Sir Eric Sharp	22.1.97	D.H. Foster	A.W. Reader, R. Guile, R.T. Kearns	M. Scanlan	Cable & Wireless (Marine) Ltd
Siskin Arrow	29.7.96	R.L. Sequeira	S.M. Atamjit, Y.S. Reckly, E.M. Kutty	D.C. Bania	Gearbulk (UK) Ltd
Snow Cape	11.11.96	C.R. Mundy	R.L. Reazo, R.C. Roquios, D.G. Spooner	I.L. Guinoo	Blue Star Ship Management Ltd
Snow Crystal	13.1.97	A. Hamill	A. Goyena, R. Cubil, A. Pagatpatan	—	Holy House Shipping AB
Snow Delta	13.1.97	L.M. Colam	E.Z. Anuales, A.G. Groom, D.H. Hermogino	E.L. Espera	Blue Star Ship Management Ltd
Snow Drift	11.2.97	B. Yelland	E.M. Santos, R.A. Ramos, D.T. Valencia	—	Holy House Shipping AB
Snow Flower	7.5.96	W.G. Lockie	E. Maano, R.S. Barcelon, A. Laurente	—	Holy House Shipping AB
Sociality	14.8.96	M. Bailey	J. Funge	—	F.T. Everard & Sons Ltd
Solena	25.6.96	R. Matuszak	R. Clitar, E. Lumberio, M. Fuchs	—	Shell Marine Personnel (IOM). Ltd
Speciality	†	—	—	—	F.T. Everard & Sons Ltd
Speybank	17.12.96	J.J. Millar	K.W. Mullholland, V. Mantul, K. Klucharev	F. Kozachenko	Andrew Weir Shipping Ltd
Stability	†	—	—	—	F.T. Everard & Sons Ltd
Staffordshire	†	—	—	—	Bibby Line Ltd
Stena Felicity	†	—	—	—	Stena Line Ltd
Storrington	30.7.96	W. McNaughton	D.M. Shaw, B. Rogerson, R.M. Maclure	—	Stephenson Clarke Shipping Ltd
Stresa	†	—	—	—	Wallem Ship Management (HK) Ltd
SubSea Mayo	*	—	—	—	SubSea Offshore Ltd
Sulisker	24.9.96	D.W. Temple	J.J. Coyle, I.A. Craig, I. Campbell	—	Scottish Office, Agr. & Fisheries Dept
Summer Breeze	25.2.97	P.G. Pinkerton	R.D. Basilio, C.V. Reston, W.J. Gonzales	L.P. Tipo	Hoegh Fleet Services AS
Summer Flower	1.10.96	P.H. Dathan	R.P. Macuto, A.A. Egos, M.C. Ramos	E. Radan	Hoegh Fleet Services AS
Summer Meadow	†	—	—	—	Hoegh Fleet Services AS
Summer Wind	12.12.96	D.R. Perry	J. Aquilino, P. Sood, M. Balanay	L. Manzano	Hoegh Fleet Services AS
Sunda	1.11.96	A. Ahmed	A.S. Topno, V.J. Vagher, B.P. Tailor	B.D. Antia	Wallem Ship Management (HK) Ltd
Sun Suma	4.4.96	U.K. Teji	E.M. Kutty, S. Mathew, L.G. Maben	—	United Ship Management Ltd
Sunny Clipper	†	—	—	—	Grand Seatrade Shipping Agencies Ltd
Superiority	12.4.96	P.L. Whitehouse	N. Coombs, R.T. Berry, E.K. Andoh-Wilson	—	F.T. Everard & Sons Ltd

Swan Arrow	†	—	—	—	Westfleet Management AS
Swan Bay	16.4.96	U. Agner	D. Mamisay, D.R.J. Deldo	C. Delleva	Swan Shipping A/S
Swan River	†	—	—	—	Swan Shipping A/S
Tamamima	†	—	—	—	V.Ships (UK) Ltd
Tamamonta	†	—	—	—	V.Ships (UK) Ltd
Tamar F.I.	†	—	—	—	Bryon Marine Ltd
Tankerman	†	—	—	—	James Fisher & Sons (Liverpool) Ltd
Tarago	17.3.97	J. Wrigley	M. Fuentesfina, W. Camaso, M. Santic	Q. Vinterez	Acomarit (UK) Ltd
Tasman Universal	25.2.97	G.R. Paxton	R. Lavictoria, D. Selixido, R. Mabuyo	B. Wijeysooria	London Ship Managers Ltd
Taunton	14.2.97	L.J. Hesketh	K.A. Maltby, J. Khare, T.W. Noronha	C.D. Joshi	P&O Bulk Shipping Ltd
Teignbank	28.10.96	M.A. Mackenzie	V.P. Zheleznyakov, S. Skvorksov, J.T. MacKereth	Y. Voloshin	Andrew Weir Shipping Ltd
Tepozteco II	17.3.97	Z. Tyszczak	F.L. Utrera, A.G. Cruz, S.P. Villanueva	A.L. Garcia	Transportacion Maritima Mexicana
Tobias Maersk	18.10.96	C. Robinson	P. Hanford, J. Connelly, G.J. Griffiths	—	The Maersk Co. Ltd
Toisa Conqueror	†	—	—	—	Sealion Shipping Ltd
Toisa Cougar	1.10.96	M.J. O'Sullivan	C. Pritchard, P.A. Yardley, S. Bellamy	—	Sealion Shipping Ltd
Toisa Gryphon	13.1.97	A.R. Pedder	K.A. Hughes	—	Sealion Shipping Ltd
Toisa Petrel	†	—	—	—	Sealion Shipping Ltd
Toisa Puffin	†	—	—	—	Sealion Shipping Ltd
Toisa Sentinel	12.3.97	R.T. Blackman	J.S. Martinez, A. Lipski, C.U. Thomas	—	Sealion Shipping Ltd
Toisa Widgeon	†	—	—	—	Sealion Shipping Ltd
Torben Spirit	†	—	—	—	Norbulk Shipping (UK) Ltd
Trade Apollo	*	—	—	—	Wah Tung Shipping Agency Co. Ltd
Trade Maple	*	—	—	—	Wah Tung Shipping Agency Co. Ltd
Trojan Star	18.11.96	P. Richards	R. Cantalejo, R. Cuartsma, C. Enriquez	—	Blue Star Ship Management Ltd
Tsuru Arrow	*	—	—	—	Gearbulk (UK) Ltd
Tudor Star	*	—	—	—	Blue Star Ship Management Ltd
Tycho Brahe	*	—	—	—	Hanseatic Shipping Co. Ltd
Uisge Gorm	†	—	—	—	Bluewater Operations (UK) Ltd
Ullswater	21.1.97	I.W. Connor	K. Katrak, E. Fernandes	V. Rodriques	P&O Bulk Shipping Ltd
Victoria	17.12.96	R. Fennelow	N. White, R. Weeks, H.J. Rushton	T. Beck	P&O Cruises Ltd
Vigilant	5.6.96	D.L. Beveridge	I. Beaton, A. MacCallum, R.J. Sheldon	—	Scottish Office, Agr. & Fisheries Dept.
Viking Supporter	†	—	—	—	Viking Standby Ltd
Vine	13.1.97	J.M. Milloy	V.J. Thayil, M.J. Howarth, A. Banerjee	S. Chanda	P&O Bulk Shipping Ltd
Waasland	9.12.96	M. Roberts	—	—	Tecto N.V.
Waterford	19.9.96	G. Nicholls	A. Kumar, J. Millioy, M. Howarth	J. Bhadra	P&O Bulk Shipping Ltd
Western Bridge	20.1.97	A. Crofts	N. Jerrum, W. Roberts, K. Henderson	—	Ropner Shipping Services Ltd
Westfield	*	—	—	—	Gearbulk (UK) Ltd
Westminster	11.11.96	A.R. James	D. Malone	—	Northern Marine Management Ltd
Westra	21.5.96	W.A. Brown	J. Ebdy, A.W. Blance	—	Scottish Office, Agr. & Fisheries Dept.
Whitcrest	7.7.96	H. Elliott	D.J. Williams, G. Sizer, D. Fox	—	J.H. Whitaker (Tankers) Ltd
Wilomi Yukon	21.5.96	P.A. Wickman	J. Denya, P. Wilczynski, B. Wojniusz	J. Sztukowski	Anders Wilhelmsen & Co. AS
World Nord	20.2.97	C.M.R. Lloyd	S.K. Anand, C.T. Lam, C.L. Lam	S.B. Khanna	World-Wide Shipping Agency (Singapore) Pte Ltd
World Place	29.7.96	H.S. Bains	P.V. Gore, H. Naryan, R. Pillai	—	Univan Ship Management Ltd
World Spear	†	—	—	—	Marine Navigation Co. Ltd
York	10.1.97	S.B. Tudor	B.J. Diaz, S. Sharma, D.J. Nelson	J. Ansari	P&O Bulk Shipping Ltd
Zetland	27.1.97	J.A. Smeeton	L.T. Cusiter, R. Bhatia, Z.S. Irani	J.A.K. Kazi	P&O Bulk Shipping Ltd

'Marid' Ships

The following is a list of ships recruited for the observing and reporting of sea temperatures from coastal waters of Great Britain. Masters are requested to point out any errors or omissions in the lists.

Name of Vessel	Master	Owner/Manager
Achatina	R. Astridge	Shell International Trading & Shipping Co. Ltd
Acila	J.W.A. Rommes	Shell International Trading & Shipping Co. Ltd
Amity	C.P. Brabban	F.T. Everard & Sons Ltd
Amoria	—	Shell International Trading & Shipping Co. Ltd
Anchorman	G. Mount	James Fisher & Sons (Liverpool) Ltd
Apricity	D.C. Cornelious	F.T. Everard & Sons Ltd
Arco Avon	D. Griffiths	ARC Marine Ltd
Arianta	B. Lohnes	Shell International Trading & Shipping Co. Ltd
Asprella	M. Spoors	Shell International Trading & Shipping Co. Ltd
Authenticity	D. Richies	F.T. Everard & Sons Ltd
BP Springer	N. Easton	BP Oil U.K. Ltd
Balmoral	—. Tambling	Waverley Excursions Ltd
Blackfriars	T. Baker	Crescent Shipping Ltd
Briarthorn	G.M. Skea	James Fisher & Sons (Liverpool) Ltd
Celtic Terrier	M.T. Corner	Campbell Maritime Ltd
Chartsman	K.G. Blacker	James Fisher & Sons (Liverpool) Ltd
City of Bristol	F.G. Mealyer	United Marine Dredgers Ltd
David M	R. Vine	James Fisher & Sons (Liverpool) Ltd
Emerald	D. McCallum	Stephenson Clarke Shipping Ltd
Frederick M	B. Moore	James Fisher & Sons (Liverpool) Ltd
Hera	B.F. Sverdrup	Bergesen d.y. ASA
Hernes	—	Jebsens Ship Management (London) Ltd
Hordnes	R.D. Datu	Jebsens Ship Management (London) Ltd
Lady Stephanie	E.A. Cellini	Exmar N.V.
Lord Rank	E. Green	Ocean Youth Club
Marine Explorer	R. Wood	Eidesvik Shipping Ltd
Merchant Brilliant	C. Morrison	Merchant Ferries/V.Ships (U.K.) Ltd
Merchant Venture	N. Barningham	Merchant Ferries/V.Ships (U.K.) Ltd
Michael M	S.W. Wright	James Fisher & Sons (Liverpool) Ltd
Northern Star	P. Coyle	Marine Management Services Ltd
Pentland	B. Clifford	Torbulk Ltd
Petro Avon	J. Preece	Petroleum Shipping Ltd
River Lune	M.H. Farmer	Belfast Freight Ferries
Robert M	R. Vine	James Fisher & Sons (Liverpool) Ltd
Rosethorn	A. Lomas	James Fisher & Sons (Liverpool) Ltd
Saga Moon	G. Black	Belfast Freight Ferries
Sand Kestrel	S. Tindall	South Coast Shipping Co. Ltd
Sanguity	D. Golden	F.T. Everard & Sons Ltd
Silverthorn	H. Kotman	James Fisher & Sons (Liverpool) Ltd
Spheroid	A. Moran	Belfast Freight Ferries
Stena Adventurer	J. Wilcox	Stena Line Ltd
Stena Antrim	—	Stena Line Ltd
Stena Caledonia	D. Ramsey	Stena Line Ltd
Stena Challenger	D. Farrell	Stena Line Ltd
Stena Galloway	S. Horn	Stena Line Ltd
Stolt Avocet	T. van Manen	Stolt-Nielsen Rederi A/S
Superferry	A. Papadias	Swansea-Cork Ferries Ltd
Susanne	—	Terkol Tank A/S
Taikoo	—	Ocean Youth Yacht Club
Tillerman	D.W. Rice	James Fisher & Sons (Liverpool) Ltd
Vanessa C	—. Schilpzand	Carisbrooke Shipping plc
Waverley	D.L. Neill	Waverley Excursions Ltd
Welsh Piper	D.J. Jones	British Dredging Aggregates Ltd

Oil Rigs and Platforms

Name of Rig or Platform	Owners/Operators
AH001	Amerada Hess Ltd
Beryl A	Mobil North Sea Ltd
Beryl B	Mobil North Sea Ltd
Buchan A	Talisman Energy (UK) Ltd
Cleeton Platform	BP Exploration
Drill Star	Sedco-Forex
Glomar Arctic III	Global Marine Drilling Co. Ltd
Gryphon A	Kerr-Magee Oil (UK) plc
Heather A	Unocal (Britain) Ltd
Henry Goodrich	Reading & Bates (UK) Ltd
John Shaw	Sonat Offshore (UK) Inc.
Maureen A	Phillips Petroleum UK Co. Ltd
Montrose A	Amoco (UK) Exploration Co.
Morecambe Bay AP1	British Gas Hydrocarbon Resources Ltd
Neddrill 6	Noble Drilling (UK) Ltd
Ocean Alliance	Diamond Offshore Ltd
Ocean Countess	Diamond Offshore Ltd
Ocean Guardian	Diamond Offshore Ltd
Paul B. Loyd Jr.	Reading & Bates (UK) Ltd
Santa Fe Galaxy I	Santa Fe Drilling Co. Ltd
Santa Fe Magellan	Santa Fe Drilling Co. Ltd
Santa Fe Rig 135	Santa Fe Drilling Co. Ltd
Santa Fe Monitor	Santa Fe Drilling Co. Ltd
Santa Fe Monarch	Santa Fe Drilling Co. Ltd
Sedco 706	Sedco-Forex
Sedco 707	Sedco-Forex
Sedco 712	Sedco-Forex
Sedco 714	Sedco-Forex
Sovereign Explorer	Sedco-Forex
Tartan A	Texaco North Sea UK Co. Ltd
Tiffany Platform	Agip (UK) Ltd
Viking B	Conoco (UK) Ltd

BRITISH COMMONWEALTH

The following lists give the names of Selected and Supplementary Ships, and the number of Auxiliary Ships where known (those which only report in 'sparse areas'), which voluntarily co-operate with meteorological services of the British Commonwealth.
Information for these lists is required by 15 March each year. Information for the January corrective lists is required by 15 September each year.

AUSTRALIA (Information dated 1 October 1996)

NAMES OF VESSELS

Selected Ships:
Al Khaleej
Al Kuwait
Al Qurain
Altrans
Arafura
Ariake
Aurora Australis
Australia Star
Australian Achiever
Australian Advance
Australian Endeavour
Australian Pride
Barbican Spirit
Barbican Star
Boral Gas
Brahman Express
Cape Grafton
Capitaine Cook
Capitaine Kermadec
Challis Venture
Chekiang
Choyang Sydney
Coral Chief
Danny F II
El Cordero
Fernanda F
Fitzroy River
Franklin
Fua Kavenga
Hanna Bakke II
Highland Chief

Selected Ships (contd)
Iron Carpentaria
Iron Chieftan
Iron Curtis
Iron Dampier
Iron Flinders
Iron Kembla
Iron Monarch
Iron Newcastle
Iron Pacific
Iron Prince
Iron Spencer
Iron Sturt
Iron Whyalla
Iron Yardi
Klang Reefer
Kowulka
Leeuwin
Lindsay Clark
Mawashi Al-Gassem
Mawashi Tabuk
Mosdeep
MRS Pioneer
Nivosa
NOL Amber
Northwest Sanderling
Northwest Sandpiper
Northwest Seaeagle
Northwest Shearwater
Northwest Snipe
Northwest Stormpetrel
Ormiston

Selected Ships (contd)
Pacific Conquest
Pacific Gas
Papuan Chief
Pathfinder II
Portland
Rig Seismic
River Boyne
River Embley
River Torrens
Sarqii Trader
Seakap
Sina
Sitka
Southern Amedee
Southern Surveyor
Spirit of Tasmania
Sunshine La Plata
Swan Reefer
TNT Carpentaria
Tradewind Express
Tranztas Trader
Wyuna
Young Endeavour

Supplementary Ships:
Kapala
One and All

Auxiliary Ships:
Australia has one Auxiliary Ship currently reporting.

HONG KONG (Information dated 1 January 1997)

NAMES OF VESSELS

Selected Ships:
Al Mariyah
Anna
Ardmore
Asian Challenger
Asimont
Bunga Kantan
Bunga Pelangi Dua
Bunga Suria
Chengtu
Delmas Bougainville
Delmas Joinville
Delmas Tourville
Eagle Anahuac
Eagle Malaysia
Eagle Respect
Fair Bridge
Grand Noble
Gulf Spirit
Hai Kang
Hawk Arrow
Highlander
IBN Jubayr
IBN Khaldoun
IBN Zuhr
Jin Fa
K.I.A. Waleed
Kitty
Kurama
Kwangtung
Maersk Asia Decimo
Maersk Nanhai

Selected Ships (contd):
Marienvoy
Maritime Joy
Mundogas Orinoco
Navios Bulker
New Oasis
Nongkhai Navee
Ocean Beluga
Ocean Centaurus
Ocean Sincerity
Ocean Strength
OOCL Alliance
OOCL America
OOCL Award
OOCL California
OOCL China
OOCL Envoy
OOCL Exporter
OOCL Fair
OOCL Fame
OOCL Fidelity
OOCL Fortune
OOCL Frontier
OOCL Hong Kong
OOCL Japan
Osaka
Osprey Arrow
Pacific Islander
Pearl
Phichit Navee
Poyang
Rickmers Shanghai

Selected Ships (contd):
Rowan
Seafalcon
Seamaster
Shantung
Sishen
Surin Navee
Szechuen
Talabot
Tampa
Tapiola
Texas
Torrens
Venture
Vera Cruz
Wawasen Setia

Supplementary Ships:
Andes Challenger
Eastern Sea
Green Era
Lamphun Navee
Maritime Faith
Maritime Victory
Rainbow
Seamaster I
Silver Clipper
Success Bulker
Toba
Tohzan

Auxiliary Ships:
Hong Kong has 1 Auxiliary Ship currently reporting.

INDIA (Information dated 1 March 1997)

NAMES OF VESSELS

Selected Ships:
Akbar
Arunachal Pradesh
Bharatendu
Bhavabhuti
B.R. Ambedkar
Harshavardhan
Lokmanya Tilak
Sagar Sampada
Sagar Sanya
Samudra Manthan
State of Andhra Pradesh
Vishnu Sagar

Supplementary Ships:
A B Tarapore PVC
APJ Anand
APJ Angad
APJ Anjali
APJ Priti
APJ Shalin
APJ Sushma
Aditya Usha
Alaknanda
Annapurna
Aurobindo
Bhagat Singh
Bharat Seema
CHM Piri Singh PVC
Chandidas
Chennai Jaayam
Chennai Ookkam
Chennai Perumai
Chennai Polivu
Chennai Sadhanai
Chennai Veeram
Chennai Velarchi
Chatrapati Shivaji
Continental Rose
Dadabhai Nowroji
Dakshineshwar
Diglipur
Dweep Setu
Fonj Shekhan PVC
Ganga Sagar
Guru Bachlan Singh Salaria PVC
Hardwar
Har Govind
Harkishan
Havildar Abdul Hamid PVC
Homi Bhabha
Indian Goodwill

Supplementary Ships (contd):
Indian Valour
Indira Gandhi
Jagat Samrat
Jagat Vijeta
Jag Manek
Jag Pari
Jag Prabhat
Jag Prakash
Jag Preeti
Jag Skakti
Jag Shanti
Jag Vijay
Jag Vivek
Jala Tapi
Jala Vallabh
Jameela
Jawaharlal Nehru
Jay Laxmi
Jay Narayan Vyas
Kabirdas
Kalidas
Kanchan Junga
Kanpur
Kolandia
Lal Bahadur Shastri
Lance Nail Albert Ekka PVC
Lok Maheshwari
Lok Prakash
Lok Pratap
Lok Pratima
Lok Preeti
Lok Rajeshwari
Lok Vikas
Lt Arun Khetrapal PVC
MMP Wealth
Maharashtra
Maharshi Dayanand
Maharshi Karve
Major Dhansingh Thapa PVC
Major Hoshiar Singh PVC
Mandakini
Maratha Melody
Maratha Prudence
Mizoram
Motilal Nehru
Murshidabad
Naik Jadunath Singh PVC
Nand Hari
Nand Kala
Nand Kavita
Nand Kishore
Nand Rati

Supplementary Ships (contd):
Nand Smiti
Nand Srishti
Nancauri
Nandu
Nanga Parbat
Netaji Subhash Bose
Nicobar
Onge
Patliputra
Prabhu Das
Prabhu Daya
Prabhu Gopal
Prabhu Puni
Prabhu Satram
Rafi Ahmed Kidwai
Rajiv Gandhi
Rama Raghoba Rane PVC
Ramdas
Ratna Vandana
Ravidas
Sabarimala
Sagar Deep
Sagar Samrat
Sanmar Pioneer
Sarojini Naidu
Satya Murti
Skandy Surveyor
State of Gujarat
State of Haryana
State of Manipur
State of Orissa
Subhedar Joginder Singh PVC
Tirumalai
Tulsidas
Uttar Kashi
Varanasi
Varun Adhar
Vishva Bandhan
Vishva Karuna
Vishva Kaumudi
Vishva Mohini
Vishva Nandini
Vishva Pallav
Vishva Pankaj
Vishva Parag
Vishva Parijar
Vishva Parimal
Vishva Yash
Vishwesharayya
Vivekananda
Yerawa

Auxiliary Ships:
India has 8 Auxiliary Ships currently reporting.

NEW ZEALAND (Information dated 1 February 1997)

NAMES OF VESSELS

Selected Ships:	Selected Ships (contd)	Selected Ships (contd)
Ariake	*Rangiora*	*Tasman Venture*
America Star	*Rangitane*	*Toanui*
Capitaine Tasman	*Rangitata*	*Tui Cakau III*
Challenger	*Rangitoto*	*Tuurakina*
Columbia Star	*Seatow 22*	*Union Auckland*
Crusader	*Socofl Stream*	*Union Rotoiti*
Direct Kea	*Soren Larsen*	*Union Rotoma*
Forum Samoa	*Spirit of Competition*	*Union Rotorua*
Freshwater Bay	*Spirit of Freedom*	*Wellington Express*
Golden Bay	*Swan Tide*	
Kotuku	*Sydney Express*	
Marico	*Sydney Star*	
Matilda Bay	*T A Explorer*	
Melbourne Star	*T A Navigator*	
New Zealand Pacific	*Taiko*	
New Zealand Star	*Tainui*	Supplementary Ships:
Ngamaru III	*Takitimu*	*Arahanga*
Pacific Ariki	*Tangaroa*	*Arahara*
Pacific Onyx	*Taraihiko*	*Aratikja*
Ranginui	*Tasman Enterprise*	*Suilven*

Auxiliary Ships:
New Zealand has a fleet of 13 Auxiliary Ships currently reporting.

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